2005 STANDARD DRAWINGS

Part 1

http://www.udot.utah.gov/index.php/m=c/tid=1091

Change 8, Issued December 18, 2006

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: January 1, 2005

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2004 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Dated January 1, 2005

A complete set of digitally signed Standard Drawings, 2005 version, and index are attached.

Electronic files for all Standards Drawings are available on the Internet from the "2005 Standards" Web page, under "2005 Standard Drawings." Individual files are available in Microstation DGN format for download individually or by Series for PDF format files from the "2005 Individual Standard Drawings" link. The Series files are zipped in an EXE file. The entire set of drawings is available in Adobe pdf format in six files from the same area as the "2005 Current Drawings" link. The following page shows a break down of the six parts and the drawing series included in each part.

Any changes made to a digitally signed UDOT Standard Drawing Microstation DGN files automatically invalids the digital signatures.

If you have any questions or problems with the electronic files contact me at 801-964-4570 or by email at baxelrod@utah.gov.

Because of file size the 2005 Standard Drawings have been split into six files. The contents of each part are listed below.

Part 1
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6
ST Series Drawings
SW Series Drawings
TC Series Drawings

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: March 14, 2005

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 1, Dated March 14, 2005

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change One
N/A	Memo - Insert after cover
Index	Index - revised
N/A	Listing of Revised Standard Drawings, Change One
Sheet 1B	Sheet 1B – revised
Sheet 1C	Sheet 1C – revised
AT 1	AT 1 – revised
AT 2	AT 2 – revised
AT 3	AT 3 – revised
AT 5	AT 5 – revised
AT 6	AT 6 – revised
AT 7	AT 7 – revised
AT 8	AT 8 – revised
AT 9	AT 9 – revised
AT 10	AT 10 – revised
AT 11	AT 11 – revised
AT 12	AT 12 – revised
AT 13	N/A – drawing deleted
AT 14	AT 14 – revised
AT 15	AT 15 – revised
AT 16	AT 16 – revised
AT 17	AT 17 – revised
N/A	AT 18 – new
BA 3	N/A – drawing deleted
N/A	BA 3A – new
N/A	BA 3B – new

BA 4B	BA 4B – revised
N/A	BA 4C – new
CC 7	N/A – drawing deleted
N/A	CC 7A – new
CC 8	N/A – drawing deleted
N/A	CC 8A – new
N/A	CC 8B – new
CC 9A	CC 9A – revised
CC 9B	CC 9B – revised
DD 4	DD 4 – revised
FG 3	FG 3 – revised
ST 5	ST 5 – revised

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Because of file size the 2005 Standard Drawings have been split into six files. The contents of each part are listed below.

Part 1 (Updated as part of Change 1)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1)
ST Series Drawings
SW Series Drawings
TC Series Drawings

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: May 10, 2005

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 2, Dated May 10, 2005

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change Two
N/A	Memo - Insert after cover
Index	Index - revised
Listing	Listing of Revised Standard Drawings, With Changes 1 and 2
Sheet 1B	Sheet 1B - revised
Sheet 1C	Sheet 1C - revised
AT 4	AT 4 - revised
CB 1	CB 1 - revised
CB 2	CB 2 - revised
CB 3	CB 3 - revised
CC 8A	CC 8A - revised
CC 8B	CC 8B - revised
CC 9A	CC 9A - revised
CC 9B	CC 9B - revised
DD 4	DD 4 - revised
FG 4	N/A - drawing deleted
N/A	FG 4A - new
N/A	FG 4B - new
SL 12	SL 12 - revised
N/A	SL 13 - new
SN 8	SN 8 - revised
SN 11	SN 11 - revised

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Because of file size the 2005 Standard Drawings have been split into six files. The contents of each part are listed below.

Part 1 (Updated as part of Change 1 and 2)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1 and 2)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1 and 2)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1 and 2)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5 (Updated as part of Change 2)
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1)
ST Series Drawings
SW Series Drawings
TC Series Drawings

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: July 12, 2005

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 3, Dated July 12, 2005

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change Three
N/A	Memo - Insert after cover
Index	Index - revised
Listing	Listing of Revised Standard Drawings, With Changes 1, 2, & 3
Sheet 1B	Sheet 1B - revised
Sheet 1C	Sheet 1C - revised
CB 5A	CB 5A - revised
GW 5A	GW 5A - revised
GW 5B	GW 5B - revised
GW 5C	GW 5C - revised

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Any changes made to a digitally signed UDOT Standard Drawing Microstation DGN files automatically invalids the digital signatures.

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Because of file size the 2005 Standard Drawings have been split into six files. The contents of each part are listed below.

Part 1 (Updated as part of Change 1, 2, and 3)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1, 2, and 3)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1 and 2)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1, 2, and 3)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5 (Updated as part of Change 2)
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1)
ST Series Drawings
SW Series Drawings
TC Series Drawings

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: September 12, 2005

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 4, Dated September 12, 2005

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change Four
N/A	Memo - Insert after cover
Index	Index - revised
Listing	Listing of Revised Standard Drawings, With Changes 1, 2, 3, & 4
Sheet 1B	Sheet 1B - revised
Sheet 1C	Sheet 1C - revised
BA 1B	BA 1B- revised
BA 3B	BA 3B- revised
BA 4B	BA 4B- revised
None	CC 7B - new
DG 1	DG 1 - revised
EN 1	EN 1 - revised
EN 2	EN 2 - revised
EN 3	EN 3 - revised
EN 4	EN 4 - revised
EN 5	EN 5 - revised
None	EN 6 - new
None	EN 7 - new
SL 14	SL 14 - revised
SL 15	SL 15 - revised
SN 12A	SN 12A - revised

Electronic files for all Standards Drawings are available on the Internet from the "2005 Standards" Web page, under "2005 Standard Drawings." Individual files are available in two locations. For Microstation DGN format files download individual files from the "2005 Individual Standard Drawings (DGN)" link. For Adobe PDF format files download individual

and series files from the “2005 Individual Standard Drawings (PDF)” link. The Series files are zipped in an EXE file. The entire set of drawings is available in Adobe pdf format in six files from the same area as the “2005 Current Drawings” link. The following page shows a break down of the six parts and the drawing series included in each part.

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Because of file size the 2005 Standard Drawings have been split into six files. The contents of each part are listed below.

Part 1 (Updated as part of Change 1, 2, 3, and 4)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1, 2, 3, and 4)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1, 2, and 4)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1, 2, and 3)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5 (Updated as part of Change 2 and 4)
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1)
ST Series Drawings
SW Series Drawings
TC Series Drawings

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: November 9, 2005

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 5, Dated November 9, 2005

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change Five
N/A	Memo - Insert after cover
Index	Index - revised
Listing	Listing of Revised Standard Drawings, w/Changes 1, 2, 3, 4, & 5
Sheet 1B	Sheet 1B - revised
BA 4D	BA 4D- revised
None	BA 4R- new
CC 5	None - deleted
None	CC 5A - new
None	CC 5B - new
None	CC 5C - new

Electronic files for all Standards Drawings are available on the Internet from the "2005 Standards" Web page, under "2005 Standard Drawings." Individual files are available in two locations. For Microstation DGN format files download individual files from the "2005 Individual Standard Drawings (DGN)" link. For Adobe PDF format files download individual and series files from the "2005 Individual Standard Drawings (PDF)" link. The Series files are zipped in an EXE file. The entire set of drawings is available in Adobe pdf format in six files from the same area as the "2005 Current Drawings" link. The following page shows a break down of the six parts and the drawing series included in each part.

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Part 1 (Updated as part of Change 1, 2, 3, 4, and 5)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1, 2, 3, 4, and 5)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1, 2, and 4)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1, 2, and 3)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5 (Updated as part of Change 2 and 4)
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1)
ST Series Drawings
SW Series Drawings
TC Series Drawings

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: March 2, 2006

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 6, Dated March 2, 2006

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change Six
N/A	Memo - Insert after cover
Index	Index - revised
Listing	Listing of Revised Standard Drawings, w/Changes 1, 2, 3, 4, 5, & 6
Sheet 1B	Sheet 1B - revised
Sheet 1C	Sheet 1C - revised
AT 7	AT 7- revised
AT 11	AT 11- revised
BA 1A	BA 1A- revised
DG 5	None - deleted
None	DG 5A - new
None	DG 5B - new
None	DG 5C - new
DG 6	DG 6 - revised
DG 9	DG 9 - revised
GW 5A	GW 5A - revised
GW 5B	GW 5B - revised
SL 1A	SL 1A - revised
SL 1B	SL 1B - revised
SL 2	SL 2- revised
SL 3	SL 3 - revised
SL 4	SL 4 - revised
SL 5	SL 5 - revised
SL 8	SL 8 - revised
SL 10	SL 10 - revised

SL 11	SL 11 - revised
SL 13	SL 13 - revised
ST 5	ST 5 - revised
SW 4B	SW 4B - revised

Electronic files for all Standards Drawings are available on the Internet from the "2005 Standards" Web page, under "2005 Standard Drawings." Individual files are available in two locations. For Microstation DGN format files download individual files from the "2005 Individual Standard Drawings (DGN)" link. For Adobe PDF format files download individual and series files from the "2005 Individual Standard Drawings (PDF)" link. The Series files are zipped in an EXE file. The entire set of drawings is available in Adobe pdf format in six files from the same area as the "2005 Current Drawings" link. The following page shows a break down of the six parts and the drawing series included in each part.

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Please note that the 2005 Standards are still in effect. There is no plan to issue a new set of Standards for a 2006 version.

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Part 1 (Updated as part of Change 1, 2, 3, 4, 5, and 6)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1, 2, 3, 4, and 5)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1, 2, 4 and 6)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1, 2, 3, and 6)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5 (Updated as part of Change 2, 4, and 6)
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1 and 6)
ST Series Drawings
SW Series Drawings
TC Series Drawings

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: July 11, 2006

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 7, Dated July 11, 2006

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change Seven
N/A	Memo - Insert after cover
Index	Index - revised
Listing	Listing of Revised Standard Drawings, w/Changes 1, 2, 3, 4, 5, 6, & 7
Sheet 1C	Sheet 1C - revised
GW 6	GW 6 - revised
ST 4	ST 4 - revised
TC 11	TC 11 - revised

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Part 1 (Updated as part of Change 1, 2, 3, 4, 5, 6, and 7)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1, 2, 3, 4, and 5)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1, 2, 4 and 6)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1, 2, 3, 6, and 7)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5 (Updated as part of Change 2, 4, and 6)
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1, 6, and 7)
ST Series Drawings
SW Series Drawings
TC Series Drawings

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: December 18, 2006

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 8, Dated December 18, 2006

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change Eight
N/A	Memo - Insert after cover
Index	Index - revised
Listing	Listing of Revised Standard Drawings, w/Changes 1, 2, 3, 4, 5, 6, 7, & 8
Sheet 1B	Sheet 1B - revised
BA 3A	None - deleted (replaced by BA 3A1 and BA 3A2)
None	BA 3A1 - new
None	BA 3A2 - new
BA 3B	BA 3B - revised
None	BA 3C - new
BA 4B	BA 4B - revised
BA 4D	BA 4D - revised
BA 4E	BA 4E - revised
BA 4L	BA 4L - revised
BA 4P	BA 4P - revised
None	BA 4S1 - new
None	BA 4S2 - new
CC 8A	CC 8A - revised
CC 8B	CC 8B - revised
CC 9A	CC 9A - revised

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Individual Standard Drawings (DGN)" link. For Adobe PDF format files download individual and series files from the "2005 Individual Standard Drawings (PDF)" link. The Series files are zipped in an EXE file. The entire set of drawings is available in Adobe pdf format in six files from the same area as the "2005 Current Drawings" link. The following page shows a break down of the six parts and the drawing series included in each part.

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Part 1 (Updated as part of Change 1, 2, 3, 4, 5, 6, 7, and 8)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1, 2, 3, 4, 5, and 8)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1, 2, 4 and 6)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1, 2, 3, 6, and 7)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5 (Updated as part of Change 2, 4, and 6)
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1, 6, and 7)
ST Series Drawings
SW Series Drawings
TC Series Drawings

STANDARD DRAWINGS INDEX (Change 8, Dated 12/18/06)
UTAH DEPARTMENT OF TRANSPORTATION

X	NUMBER	TITLE	CURRENT DATE
		Advanced Traffic Management System (AT)	
___	AT 1	Legend Sheet	02/24/05
___	AT 2	Ramp Meter Details	02/24/05
___	AT 3	Ramp Meter Sign Panel	02/24/05
___	AT 4	Typical Ramp Meter Signal Head Mounting	04/28/05
___	AT 5	Ramp Meter Loop Installation	02/24/05
___	AT 6	Conduit Details	02/24/05
___	AT 7	Polymer-Concrete Junction Box Details	02/23/06
___	AT 8	ATMS Cabinet	02/24/05
___	AT 9	ATMS Cabinet Disconnect And Transformer Frame	02/24/05
___	AT 10	CCTV Mounting Details	02/24/05
___	AT 11	CCTV Pole Details	02/23/06
___	AT 12	CCTV Pole Foundation For Dedicated CCTV Pole	02/24/05
___	AT 13	Not Used	
___	AT 14	Weigh In Motion Piezo Details	02/24/05
___	AT 15	RWIS Site And Foundation Details	02/24/05
___	AT 16	RWIS Tower Base And Service Pad Layout	02/24/05
___	AT 17	Ground Rod Installation And Tower Grounding	02/24/05
___	AT 18	TMS Detection Zone Layout	02/24/05
		Barriers (BA)	
___	BA 1A	Precast Concrete Full Barrier Standard Section	02/23/06
___	BA 1B	Precast Concrete Full Barrier Standard Section	08/25/05
___	BA 1C	Precast Concrete Barrier Terminal For Speed ≤ 40 MPH	01/01/05
___	BA 1D	Precast Concrete Full Section Median Installation	01/01/05
___	BA 1E	Precast Concrete Full Section Shoulder Applications	01/01/05
___	BA 2	Precast Concrete Half Barrier Standard Section	01/01/05
___	BA 3A1	Cast In Place Constant Slope Barrier	**11/30/06**
___	BA 3A2	Cast In Place Constant Slope Barrier	**11/30/06**
___	BA 3B	Precast Concrete Constant Slope Transition Section For Crash Cushion And W-Beam Guardrail	**11/30/06**
___	BA 3C	Precast Constant Slope Concrete Barrier (Type X Joint Connection)	**11/30/06**
___	BA 4A	W-Beam Guardrail Hardware	01/01/05
___	BA 4B	W-Beam Guardrail Transition	**11/30/06**
___	BA 4C	W-Beam Guardrail Transition Curb Section	02/24/05
___	BA 4D	W-Beam Guardrail Anchor Type I	**11/30/06**
___	BA 4E	W-Beam Guardrail Installations	**11/30/06**
___	BA 4F	W-Beam Guardrail Typicals Divided Roadways	01/01/05
___	BA 4G	W-Beam Guardrail Typical Multilane Arterial	01/01/05
___	BA 4H	W-Beam Guardrail Typical 2 Lane 2 Way	01/01/05
___	BA 4I	W-Beam Guardrail Buried In Backslope Terminal	01/01/05
___	BA 4J	W-Beam Guardrail Buried In Backslope Terminal With Rub Rail	01/01/05

___	BA 4K	W-Beam Guardrail Buried In Backslope Terminal Anchor	01/01/05
___	BA 4L	W-Beam Guardrail Curve Details	**11/30/06**
___	BA 4M	W-Beam Guardrail Nested Guardrail 12’ 6” Span	01/01/05
___	BA 4N	W-Beam Guardrail Nested Guardrail 18’ 9” Span	01/01/05
___	BA 4O	W-Beam Guardrail Nested Guardrail 25’ Span	01/01/05
___	BA 4P	W-Beam Guardrail With Precast Barrier For Span > 25’	**11/30/06**
___	BA 4Q	Not Use	
___	BA 4R	W-Beam Median Barrier Transition	10/27/05
___	BA 4S1	W-Beam Guardrail With Modified Curb and Curb and Gutter	**11/30/06**
___	BA 4S2	W-Beam Guardrail With Curb and Gutter ≥ 5”	**11/30/06**

Catch Basins And Cleanouts (CB)

___	CB 1	Curb and Gutter Inlet	04/28/05
___	CB 2	Open Curb Inlet	04/28/05
___	CB 3	Shallow Catch Basin	04/28/05
___	CB 4	Open Curb Shallow Catch Basin	01/01/05
___	CB 5A	Standard Catch Basin and Cleanout Box	06/30/05
___	CB 5B	Standard Catch Basin and Cleanout Box Section	01/01/05
___	CB 6A	Drop Inlet Type “A”	01/01/05
___	CB 6B	Berm Apron With Drop Inlet Type “A”	01/01/05
___	CB 7A	Drop Inlet Type “B”	01/01/05
___	CB 7B	Normal Apron With Drop Inlet Type “B”	01/01/05
___	CB 8A	Double Catch Basin	01/01/05
___	CB 8B	Double Catch Basin	01/01/05
___	CB 9A	Standard Catch Basin And Cleanout Box Situation And Layout	01/01/05
___	CB 9B	Standard Catch Basin And Cleanout Box Section Details	01/01/05
___	CB 9C	Standard Catch Basin And Cleanout Box Schedule Of Installation 18” to 42” RCP 12” to 48” CMP	01/01/05
___	CB 9D	Standard Catch Basin And Cleanout Box Schedule Of Installation 48” to 66” RCP 60” to 78” CMP	01/01/05
___	CB 10A	Standard Catch Basin And Cleanout Box Situation And Layout	01/01/05
___	CB 10B	Standard Catch Basin And Cleanout Box Section Details	01/01/05
___	CB 10C	Standard Catch Basin And Cleanout Box Schedule Of Installation 42” to 60” RCP 48” to 72” CMP	01/01/05
___	CB 11	Standard Manhole	01/01/05

Crash Cushions (CC)

___	CC 1	Crash Cushion Markings	01/01/05
___	CC 2	Crash Cushion Drainage Details Guideline A	01/01/05
___	CC 3	Crash Cushion Drainage Details Guideline B	01/01/05
___	CC 4	Details For Placement Crash Cushions Type A, B, And D	01/01/05
___	CC 5A	Grading And Placement Details Crash Cushion Type C “Brakemaster”	10/27/05
___	CC 5B	Grading And Placement Details Crash Cushion Type C “C.A.T”	10/27/05
___	CC 5C	Grading And Placement Details Crash Cushion Type C “FLEAT-MT”	10/27/05
___	CC 6	Crash Cushion Type E Sand Barrel Details	01/01/05

___	CC 7A	Grading And Installation Details Crash Cushion Type F Quad Trend 350	02/24/05
___	CC 7B	Crash Cushion Type F BEAT-SSCC	08/25/05
___	CC 8A	Grading And Installation Details Crash Cushion Type G	**11/30/06**
___	CC 8B	Grading And Installation Details For "3R" Projects Crash Cushion Type G	**11/30/06**
___	CC 9A	Grading And Installation Details Crash Cushion Type H	**11/30/06**
___	CC 9B	Grading And Installation Details Crash Cushion Type H (Parabolic Flare)	04/28/05

Diversion Boxes (DB)

___	DB 1A	Standard Diversion Box/Cover Plate/Grating For 18" DIA. or 24" DIA. Pipe	01/01/05
___	DB 1B	Standard Diversion Box Hinged Lid Details For 18" DIA. or 24" DIA. Pipe	01/01/05
___	DB 1C	Standard Diversion Box Bicycle - Safe Grating Details For 18" DIA. or 24" DIA. Pipe	01/01/05
___	DB 1D	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	01/01/05
___	DB 1E	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	01/01/05
___	DB 1F	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	01/01/05
___	DB 2A	Standard Diversion Box w/Interchangeable Walls, Bottom Slab, Walls And Apron Details	01/01/05
___	DB 2B	Standard Diversion Box w/Interchangeable Walls, Quantities Schedule	01/01/05
___	DB 2C	Standard Diversion Box w/Interchangeable Walls, Hand Slide Gate Details	01/01/05
___	DB 2D	Standard Diversion Box Type "G" Hand Slide Gate Details	01/01/05
___	DB 2E	Standard Diversion Box Hinged Lid (Solid Cover Plate) Type "A" Details Type I Plan	01/01/05
___	DB 2F	Standard Diversion Box Hinged Lid (Solid Cover Plate) Type "A" Details Type II Plan	01/01/05
___	DB 2G	Standard Diversion Box Hinged Lid Solid Cover Type "B" Details	01/01/05
___	DB 2H	Standard Diversion Box Hinged Lid Solid Cover Type "B" And "C" Details	01/01/05
___	DB 3A	Standard Diversion Box With Manhole Cover Situation And Layout	01/01/05
___	DB 3B	Standard Diversion Box With Manhole Cover Up To 42" RCP And Up To 54" CMP	01/01/05
___	DB 3C	Standard Diversion Box With Manhole Cover 48" to 72" RCP And 60" to 84" CMP	01/01/05
___	DB 4	Standard Transition Concrete Lined Ditch To Pipe Or Diversion Box	01/01/05

Design Drawings (DD)

___	DD 1	Superelevation And Widening	01/01/05
___	DD 2	Surface Ditch, Benched Slope, And Cut Ditch Details	01/01/05
___	DD 3	Climbing Lanes	01/01/05
___	DD 4	Geometric Design for Freeways (Roadway)	04/28/05
___	DD 5	Entrance And Exit Ramps At Crossroads	01/01/05
___	DD 6	Entrance And Exit Ramp Geometrics	01/01/05
___	DD 7	Freeway Crossover	01/01/05
___	DD 8	Structural Geometric Design Standards For Clearances	01/01/05
___	DD 9	Structural Geometric Design Standards	01/01/05
___	DD 10	Railroad Clearances At Highway Overpass Structures	01/01/05
___	DD 11	Rural Multi Lane Highways Other Than Freeways	01/01/05
___	DD 12	Rural Two Lane Highways	01/01/05
___	DD 13	Frontage And Access Roads (Under 50 ADT)	01/01/05
___	DD 14	Typical Rural 2 Lane Road With Median Lane And Deceleration Lane For Intersecting Crossroads	01/01/05

Drainage (DG)

___	DG 1	Fill Height for Metal Pipe (Steel)	08/25/05
___	DG 2	Fill Height for Metal Pipe (Aluminum)	01/01/05
___	DG 3	Maximum Fill Height For HDPE And PVC Pipes	01/01/05
___	DG 4	Pipe Minimum Cover	01/01/05
___	DG 5A	Plastic Pipe Culvert Installation	02/23/06
___	DG 5B	Metal Pipe Or Pipe Arch Culvert Installation	02/23/06
___	DG 5C	Precast Concrete Pipe Culvert Installation	02/23/06
___	DG 6	Safety Slope End Section For Circular and Arched Pipes	02/23/06
___	DG 7	Gasketted Joints Or Coupling Bands For CMP	01/01/05
___	DG 8	Metal Culvert End Section	01/01/05
___	DG 9	Miscellaneous Pipe Details	02/23/06

Environmental Controls (EN)

___	EN 1	Temporary Erosion Control (Check Dams)	08/25/05
___	EN 2	Temporary Erosion Control (Silt Fence)	08/25/05
___	EN 3	Temporary Erosion Control (Slope Drain And Temporary Berm)	08/25/05
___	EN 4	Temporary Erosion Control (Drop Inlet Barriers)	08/25/05
___	EN 5	Temporary Erosion Control (Pipe Inlet And Curb Inlet Barriers)	08/25/05
___	EN 6	Temporary Erosion Control (Sediment Trap and Stabilized Construction Entrance)	08/25/05
___	EN 7	Temporary Erosion Control (Straw Bale Barrier)	08/25/05

Fence And Gates (FG)

___	FG 1A	Right Of Way Fence And Gates (Wood Post)	01/01/05
___	FG 1B	Right Of Way Fence And Gates (Wood Post)	01/01/05
___	FG 2A	Right Of Way Fence And Gates (Metal Post)	01/01/05
___	FG 2B	Right Of Way Fence And Gates (Metal Post)	01/01/05
___	FG 3	Swing Gates Type I For Gates Less Than 17’	02/24/05

___	FG 4A	Deer Crossing Details	04/28/05
___	FG 4B	Deer Ramp Details	04/28/05
___	FG 5	Swing Gates Type II For Gates Wider Than 17’	01/01/05
___	FG 6	Chain Link Fence	01/01/05

Grates, Frames, And Trash Racks (GF)

___	GF 1	Manhole Frame And Grated Cover	01/01/05
___	GF 2	Manhole Frame And Solid Cover	01/01/05
___	GF 3	Rectangular Grate And Frame	01/01/05
___	GF 4	Directional Flow Grate And Frame	01/01/05
___	GF 5	Solid Cover And Frame	01/01/05
___	GF 6	Manhole Steps	01/01/05
___	GF 7	Standard Screw Gate And Frame	01/01/05
___	GF 8	2’ x 2’ Grate And Frame	01/01/05
___	GF 9	28” x 24” Directional Flow Grate And Frame	01/01/05
___	GF 10	Standard Trash Racks 90 ° X-ing Angle	01/01/05
___	GF 11	Standard Trash Racks	01/01/05
___	GF 12	Standard Trash Racks	01/01/05
___	GF 13	Open Curb Inlet Grate and Frame	01/01/05
___	GF 14	Solid Cover For Std Dwg DB 1 MS-18 Loading	01/01/05
___	GF 15	Standard Screw Gate And Frame	01/01/05

General Road Work (GW)

___	GW 1	Raised Median And Plowable End Section	01/01/05
___	GW 2	Concrete Curb And Gutter	01/01/05
___	GW 3	Concrete Curb And Gutter Details	01/01/05
___	GW 4	Concrete Driveways And Sidewalks	01/01/05
___	GW 5A	Pedestrian Access	02/23/06
___	GW 5B	Pedestrian Access	02/23/06
___	GW 5C	Pedestrian Access	06/30/05
___	GW 6	Right Of Way Marker	06/29/06
___	GW 7	Newspaper And Mailbox Stop Layout	01/01/05
___	GW 8	Newspaper And Mailbox Support Hardware	01/01/05
___	GW 9	Delineation Hardware	01/01/05
___	GW 10	Delineation Application	01/01/05
___	GW 11	Sidewalks And Shoulders On Urban Roadways	01/01/05

Paving (PV)

___	PV 1	Joints For Highways With Concrete Traffic Lanes And Shoulders	01/01/05
___	PV 2	Pavement/Approach Slab Details	01/01/05
___	PV 3	Concrete Pavement Details For Urban And Interstate	01/01/05
___	PV 4	Concrete Pavement Details For Urban And Interstate	01/01/05
___	PV 5	Urban Concrete Pavement Details	01/01/05
___	PV 6	Rumble Strips	01/01/05
___	PV 7	Rumble Strips - Typical Application	01/01/05
___	PV 8	Note Used	

___	PV 9	Dowel Bar Retrofit	01/01/05
		Signals (SL)	
___	SL 1A	Traffic Signal Mast Arm Pole And Luminaire Extension	02/23/06
___	SL 1B	Traffic Signal Mast Arm Pole And Luminaire Extension	02/23/06
___	SL 2	Traffic Signal Mast Arm Details 30’ Thru 75’	02/23/06
___	SL 3	Underground Service Pedestal Details	02/23/06
___	SL 4	Traffic Signal Mast Arm Pole Foundation	02/23/06
___	SL 5	Traffic Signal Pole	02/23/06
___	SL 6	Pole Mounted Power Source Details	01/01/05
___	SL 7	Span Wire Signal Pole Details	01/01/05
___	SL 8	Signal Head Details	02/23/06
___	SL 9	Pedestrian Signal Assembly	01/01/05
___	SL 10	Traffic Signal Controller Base Details	02/23/06
___	SL 11	Traffic Signal Loop Detector Details	02/23/06
___	SL 12	Traffic Counting Loop Detector Details	04/28/05
___	SL 13	Video Detection Camera Mount	02/23/06
___	SL 14	Highway Luminaire Pole Ground Mount	08/25/05
___	SL 15	Luminaire Slip Base Details	08/25/05
___	SL 16	Highway Luminaire Pole Barrier Mount	01/01/05
___	SL 17	Highway Luminaire Pole Foundation Extension	01/01/05
___	SL 18	Single Transformer Substation Details	01/01/05
		Signs (SN)	
___	SN 1	Bridge Load Limits Signs	01/01/05
___	SN 2	School Speed Limit Assembly	01/01/05
___	SN 3	Overhead School Speed Limit Assembly	01/01/05
___	SN 4	Flashing Stop Sign	01/01/05
___	SN 5	Typical Installation For Milepost Signs	01/01/05
___	SN 6	Speed Reduction Sign Sequence	01/01/05
___	SN 7	Placement of Ground Mounted Signs	01/01/05
___	SN 8	Ground Mounted Timber Sign Post (P1)	04/28/05
___	SN 9	Ground Mounted Tubular Steel Sign Post (P2)	01/01/05
___	SN 10	Ground Mounted Square Steel Sign Post (P3)	01/01/05
___	SN 11	Slipbase Ground Mounted Tubular Steel Sign Post (P4)	04/28/05
___	SN 12A	Ground Mounted Sign Installation Details	08/25/05
___	SN 12B	Ground Mounted Sign Installation Details	01/01/05
___	SN 12C	Ground Mounted Sign Installation Details	01/01/05
		Striping (ST)	
___	ST 1	Object Markers “T” Intersection And Pavement Transition Guidance	01/01/05
___	ST 2	Freeway Crossover Markings	01/01/05
___	ST 3	Typical Pavement Markings	01/01/05
___	ST 4	Crosswalks, Parking And Intersection Approaches	06/29/06
___	ST 5	Painted Median And Auxiliary Lane Details	02/23/06
___	ST 6	Passing/Climbing Lanes Traffic Control	01/01/05

___	ST 7	Pavement Markings And Signs At Railroad Crossing	01/01/05
___	ST 8	Plowable Pavement Markers	01/01/05
___	ST 9	School Crossing And School Message	01/01/05

Structures And Walls (SW)

___	SW 1A	Welded End Guard Unit	01/01/05
___	SW 1B	Precast Concrete Cattle Guard	01/01/05
___	SW 2	Noise Wall Placement Area	01/01/05
___	SW 3A	Precast Concrete Noise Wall 1 Of 2	01/01/05
___	SW 3B	Precast Concrete Noise Wall 2 Of 2	01/01/05
___	SW 4A	Precast Concrete Retaining/Noise Wall 1 Of 2	01/01/05
___	SW 4B	Precast Concrete Retaining/Noise Wall 2 Of 2	02/23/06

Traffic Control (TC)

___	TC 1A	Construction Zone Channelization Devices	01/01/05
___	TC 1B	Construction Zone Signing	01/01/05
___	TC 2A	Traffic Control General	01/01/05
___	TC 2B	Traffic Control General	01/01/05
___	TC 3	Traffic Control Project Limit Signing	01/01/05
___	TC 4	Traffic Control Urban Intersections With Roadways Under 50 MPH	01/01/05
___	TC 5	Traffic Control Urban Intersections With Roadways Under 50 MPH	01/01/05
___	TC 6	Traffic Control Pedestrian Routing	01/01/05
___	TC 7	Traffic Control Road Closed, Detour	01/01/05
___	TC 8	Traffic Control Lane Closure	01/01/05
___	TC 9	Traffic Control Multilane Closure	01/01/05
___	TC 10	Traffic Control Expressway And Freeway Crossover/Turn Around	01/01/05
___	TC 11	Traffic Control Exit Ramp Gore	06/29/06
___	TC 12	Traffic Control Entrance Ramp Gore	01/01/05
___	TC 13	Traffic Control Shoulder-Haul Road	01/01/05
___	TC 14	Traffic Control Flagging Operation	01/01/05
___	TC 15	Traffic Control 2 Lane/2 Way Seal Coat With Cover Material	01/01/05
___	TC 16	Traffic Control Pavement Marking	01/01/05

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

DWG. NO.	DESCRIPTION	DATE
	Advanced Traffic Management System (AT)	
AT 1	LEGEND SHEET	02-24-05
AT 2	RAMP METER DETAILS	02-24-05
AT 3	RAMP METER SIGN PANEL	02-24-05
AT 4	TYPICAL RAMP METER SIGNAL HEAD MOUNTING	04-28-05
AT 5	RAMP METER LOOP INSTALLATION	02-24-05
AT 6	CONDUIT DETAILS	02-24-05
AT 7	POLYMER-CONCRETE JUNCTION BOX DETAILS	02-23-06
AT 8	ATMS CABINET	02-24-05
AT 9	ATMS CABINET DISCONNECT AND TRANSFORMER FRAME	02-24-05
AT 10	CCTV MOUNTING DETAILS	02-24-05
AT 11	CCTV POLE DETAILS	02-23-06
AT 12	CCTV POLE FOUNDATION FOR DEDICATED CCTV POLE	02-24-05
AT 13	NOT USED	
AT 14	WEIGHT IN MOTION PIEZO DETAILS	02-24-05
AT 15	RWIS SITE AND FOUNDATION DETAILS	02-24-05
AT 16	RWIS TOWER BASE AND SERVICE PAD LAYOUT	02-24-05
AT 17	GROUND ROD INSTALLATION AND TOWER GROUNDING	02-24-05
AT 18	TMS DETECTION ZONE LAYOUT	02-24-05
	Barriers (BA)	
BA 1A	PRECAST CONCRETE FULL BARRIER STANDARD SECTION	02-23-06
BA 1B	PRECAST CONCRETE FULL BARRIER STANDARD SECTION	08-25-05
BA 1C	PRECAST CONCRETE BARRIER TERMINAL FOR SPEED ≤40 MPH	01-01-05
BA 1D	PRECAST CONCRETE FULL SECTION MEDIAN INSTALLATION	01-01-05
BA 1E	PRECAST CONCRETE FULL SECTION SHOULDER APPLICATIONS	01-01-05
BA 2	PRECAST CONCRETE HALF BARRIER STANDARD SECTION	01-01-05
BA 3A1	CAST IN PLACE CONSTANT SLOPE BARRIER	11-30-06
BA 3A2	CAST IN PLACE CONSTANT SLOPE BARRIER	11-30-06
BA 3B	PRECAST CONCRETE CONSTANT SLOPE TRANSITION SECTION FOR CRASH CUSHION AND W-BEAM GUARDRAIL	11-30-06
BA 3C	PRECAST CONSTANT SLOPE CONCRETE BARRIER (TYPE X JOINT CONNECTION)	11-30-06
BA 4A	W-BEAM GUARDRAIL HARDWARE	01-01-05
BA 4B	W-BEAM GUARDRAIL TRANSITION	11-30-06
BA 4C	W-BEAM GUARDRAIL TRANSITION CURB SECTIONS	02-24-05
BA 4D	W-BEAM GUARDRAIL ANCHOR TYPE I	11-30-06
BA 4E	W-BEAM GUARDRAIL INSTALLATIONS	11-30-06
BA 4F	W-BEAM GUARDRAIL TYPICALS DIVIDED ROADWAYS	01-01-05
BA 4G	W-BEAM GUARDRAIL TYPICAL MULTILANE ARTERIAL	01-01-05
BA 4H	W-BEAM GUARDRAIL TYPICAL 2 LANE 2 WAY	01-01-05
BA 4I	W-BEAM GUARDRAIL BURIED IN BACKSLOPE TERMINAL	01-01-05
BA 4J	W-BEAM GUARDRAIL BURIED IN BACKSLOPE TERMINAL WITH RUB RAIL	01-01-05
BA 4K	W-BEAM GUARDRAIL BURIED IN BACKSLOPE TERMINAL ANCHOR	01-01-05
BA 4L	W-BEAM GUARDRAIL CURVE DETAILS	11-30-06
BA 4M	W-BEAM GUARDRAIL NESTED GUARDRAIL 12' 6" SPAN	01-01-05
BA 4N	W-BEAM GUARDRAIL NESTED GUARDRAIL 18' 9" SPAN	01-01-05
BA 4O	W-BEAM GUARDRAIL NESTED GUARDRAIL 25' SPAN	01-01-05
BA 4P	W-BEAM GUARDRAIL WITH PRECAST BARRIER FOR SPAN > 25'	11-30-06
BA 4Q	NOT USED	
BA 4R	W-BEAM GUARDRAIL MEDIAN BARRIER TRANSITION	10-27-05
BA 4S1	W-BEAM GUARDRAIL WITH MODIFIED CURB AND CURB AND GUTTER	11-30-06
BA 4S2	W-BEAM GUARDRAIL WITH CURB AND GUTTER ≥5"	11-30-06
	Catch Basins and Cleanouts (CB)	
CB 1	CURB AND GUTTER INLET	04-28-05
CB 2	OPEN CURB INLET	04-28-05
CB 3	SHALLOW CATCH BASIN	04-28-05
CB 4	OPEN CURB SHALLOW CATCH BASIN	01-01-05
CB 5A	STANDARD CATCH BASIN AND CLEANOUT BOX	06-30-05
CB 5B	STANDARD CATCH BASIN AND CLEANOUT BOX SECTION	01-01-05
CB 6A	DROP INLET TYPE "A"	01-01-05
CB 6B	BERM APRON WITH DROP INLET TYPE "A"	01-01-05
CB 7A	DROP INLET TYPE "B"	01-01-05
CB 7B	NORMAL APRON WITH DROP INLET TYPE "B"	01-01-05
CB 8A	DOUBLE CATCH BASIN	01-01-05
CB 8B	DOUBLE CATCH BASIN	01-01-05
CB 9A	STANDARD CATCH BASIN AND CLEANOUT BOX SITUATION AND LAYOUT	01-01-05
CB 9B	STANDARD CATCH BASIN AND CLEANOUT BOX SECTION DETAILS	01-01-05
CB 9C	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 18" TO 42" RCP 12" TO 48" CMP	01-01-05
CB 9D	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 48" TO 66" RCP 60" TO 78" CMP	01-01-05
CB 10A	STANDARD CATCH BASIN AND CLEANOUT BOX SITUATION AND LAYOUT	01-01-05
CB 10B	STANDARD CATCH BASIN AND CLEANOUT BOX SECTION DETAILS	01-01-05
CB 10C	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 42" TO 60" RCP 48" TO 72" CMP	01-01-05
CB 11	STANDARD MANHOLE	01-01-05
	Crash Cushions (CC)	
CC 1	CRASH CUSHION MARKINGS	01-01-05
CC 2	CRASH CUSHION DRAINAGE DETAILS GUIDELINE A	01-01-05
CC 3	CRASH CUSHION DRAINAGE DETAILS GUIDELINE B	01-01-05
CC 4	DETAIL FOR PLACEMENT CRASH CUSHIONS TYPE A, B AND D	01-01-05
CC 5A	GRADING AND PLACEMENT DETAILS CRASH CUSHION TYPE C BRAKEMASTER	10-27-05
CC 5B	GRADING AND PLACEMENT DETAILS CRASH CUSHION TYPE C C.A.T.	10-27-05
CC 5C	GRADING AND PLACEMENT DETAILS CRASH CUSHION TYPE C FLEAT-MT	10-27-05
CC 6	CRASH CUSHION TYPE E SAND BARREL DETAILS	01-01-05
CC 7A	GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE F QUAD TREND 350	02-24-05
CC 7B	CRASH CUSHION TYPE F BEAT-SSCC	08-25-05
CC 8A	GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE G	11-30-06
CC 8B	GRADING AND INSTALLATION DETAILS FOR "3R" PROJECTS CRASH CUSHION TYPE G	11-30-06
CC 9A	GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE H	11-30-06
CC 9B	GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE H (PARABOLIC FLARE)	04-28-05
	Diversion Boxes (DB)	
DB 1A	STANDARD DIVERSION BOX/COVER PLATE/GRATING FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
DB 1B	STANDARD DIVERSION BOX HINGED LID DETAILS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
DB 1C	STANDARD DIVERSION BOX BICYCLE-SAFE GRATING DETAILS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
DB 1D	STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
DB 1E	STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
DB 1F	STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
DB 2A	STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS, BOTTOM SLAB, WALLS AND APRON DETAILS	01-01-05
DB 2B	STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS, QUANTITIES SCHEDULE	01-01-05
DB 2C	STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS, HAND SLIDE GATE DETAILS	01-01-05
DB 2D	STANDARD DIVERSION BOX TYPE "G" HAND SLIDE GATE DETAILS	01-01-05
DB 2E	STANDARD DIVERSION BOX HINGED LID (SOLID COVER PLATE) TYPE "A" DETAILS TYPE I PLAN	01-01-05
DB 2F	STANDARD DIVERSION BOX HINGED LID (SOLID COVER PLATE) TYPE "A" DETAILS TYPE II PLAN	01-01-05
DB 2G	STANDARD DIVERSION BOX HINGED LID SOLID COVER TYPE "B" DETAILS	01-01-05
DB 2H	STANDARD DIVERSION BOX HINGED LID SOLID COVER TYPE "B" AND "C" DETAILS	01-01-05
DB 3A	STANDARD DIVERSION BOX WITH MANHOLE COVER SITUATION AND LAYOUT	01-01-05
DB 3B	STANDARD DIVERSION BOX WITH MANHOLE COVER UP TO 42" RCP AND UP TO 54" CMP	01-01-05
DB 3C	STANDARD DIVERSION BOX WITH MANHOLE COVER 48" TO 72" RCP AND 60" TO 84" CMP	01-01-05
DB 4	STANDARD TRANSITION CONCRETE LINED DITCH TO PIPE OR DIVERSION BOX	01-01-05
	Design (DD)	
DD 1	SUPERELEVATION AND WIDENING	01-01-05
DD 2	SURFACE DITCH, BENCHED SLOPE, AND CUT DITCH DETAILS	01-01-05
DD 3	CLIMBING LANES	01-01-05
DD 4	GEOMETRIC DESIGN FOR FREEWAYS (ROADWAY)	04-28-05
DD 5	ENTRANCE AND EXIT RAMPS AT CROSSROADS	01-01-05
DD 6	ENTRANCE AND EXIT RAMP GEOMETRICS	01-01-05
DD 7	FREEWAY CROSSOVER	01-01-05
DD 8	STRUCTURAL GEOMETRIC DESIGN STANDARDS FOR CLEARANCES	01-01-05
DD 9	STRUCTURAL GEOMETRIC DESIGN STANDARDS	01-01-05
DD 10	RAILROAD CLEARANCES AT HIGHWAY OVERPASS STRUCTURES	01-01-05
DD 11	RURAL MULTI LANE HIGHWAYS OTHER THAN FREEWAYS	01-01-05
DD 12	RURAL TWO LANE HIGHWAYS	01-01-05
DD 13	FRONTAGE AND ACCESS ROADS (UNDER 50 ADT)	01-01-05
DD 14	TYPICAL RURAL 2 LANE ROAD WITH MEDIAN LANE AND DECELERATION LANE FOR INTERSECTING CROSSROADS	01-01-05
	Drainage (DG)	
DG 1	FILL HEIGHT FOR METAL PIPE (STEEL)	08-25-05
DG 2	FILL HEIGHT FOR METAL PIPE (ALUMINUM)	01-01-05
DG 3	MAXIMUM FILL HEIGHT FOR HDPE AND PVC PIPES	01-01-05
DG 4	PIPE MINIMUM COVER	01-01-05
DG 5A	PLASTIC PIPE CULVERT INSTALLATION	02-23-06
DG 5B	METAL PIPE OR PIPE ARCH CULVERT INSTALLATION	02-23-06
DG 5C	PRECAST CONCRETE PIPE CULVERT INSTALLATION	02-23-06
DG 6	SAFETY SLOPE END SECTION FOR CIRCULAR AND ARCHED PIPE	02-23-06
DG 7	GASKETTED JOINTS OR COUPLING BANDS FOR CMP	01-01-05
DG 8	METAL CULVERT END SECTION	01-01-05
DG 9	MISCELLANEOUS PIPE DETAILS	01-01-05
	Environmental Controls (EN)	
EN 1	TEMPORARY EROSION CONTROL (CHECK DAMS)	08-25-05
EN 2	TEMPORARY EROSION CONTROL (SILT FENCE)	08-25-05
EN 3	TEMPORARY EROSION CONTROL (SLOPE DRAIN AND TEMPORARY BERM)	08-25-05
EN 4	TEMPORARY EROSION CONTROL (DROP INLET BARRIERS)	08-25-05
EN 5	TEMPORARY EROSION CONTROL (PIPE INLET AND CURB INLET BARRIERS)	08-25-05
EN 6	TEMPORARY EROSION CONTROL (SEDIMENT TRAP AND STABILIZED CONSTRUCTION ENTRANCE)	08-25-05
EN 7	TEMPORARY EROSION CONTROL (STRAW BALE BARRIER)	08-25-05

☒ MARKED BOXES INDICATE DRAWINGS APPLICABLE TO THIS PROJECT

DGN File: L:\Standard_Drawings\Imperial\2005Approved\xChange8Approved\sheet1b.dgn

18-DEC-2006

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/24/05	B.A.	CHANGE 1
2	04/28/05	B.A.	CHANGE 2
3	06/30/05	B.A.	CHANGE 3
4	08/25/05	B.A.	CHANGE 4
5	10/27/05	B.A.	CHANGE 5
6	02/23/06	B.A.	CHANGE 6
7	11/30/06	B.A.	CHANGE 8

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — CHAIRMAN STANDARDS COMMITTEE — NOV.30,2006 DATE

APPROVED — DEPUTY DIRECTOR — NOV.30,2006 DATE

STANDARD DRAWING INDEX SHEET

STANDARD DRAWING TITLE

STD DWG 1-B

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

	DWG. NO.	DESCRIPTION	DATE
		Fence and Gates (FG)	
	FG 1A	RIGHT OF WAY FENCE AND GATES (WOOD POST)	01-01-05
	FG 1B	RIGHT OF WAY FENCE AND GATES (WOOD POST)	01-01-05
	FG 2A	RIGHT OF WAY FENCE AND GATES (METAL POST)	01-01-05
	FG 2B	RIGHT OF WAY FENCE AND GATES (METAL POST)	01-01-05
	FG 3	SWING GATES TYPE 1 FOR GATES LESS THAN 17'	02-24-05
	FG 4A	DEER CROSSING DETAILS	04-28-05
	FG 4B	DEER RAMP DETAILS	04-28-05
	FG 5	SWING GATES TYPE II FOR GATES WIDER THAN 17'	01-01-05
	FG 6	CHAIN LINK FENCE	01-01-05
		Grates, Frames and Trash Racks (GF)	
	GF 1	MANHOLE FRAME AND GRATED COVER	01-01-05
	GF 2	MANHOLE FRAME AND SOLID COVER	01-01-05
	GF 3	RECTANGULAR GRATE AND FRAME	01-01-05
	GF 4	DIRECTIONAL FLOW GRATE AND FRAME	01-01-05
	GF 5	SOLID COVER AND FRAME	01-01-05
	GF 6	MANHOLE STEPS	01-01-05
	GF 7	STANDARD SCREW GATE AND FRAME	01-01-05
	GF 8	2' x 2' GRATE AND FRAME	01-01-05
	GF 9	28" x 24" DIRECTIONAL FLOW GRATE AND FRAME	01-01-05
	GF 10	STANDARD TRASH RACKS 90° X-ING ANGLE	01-01-05
	GF 11	STANDARD TRASH RACKS	01-01-05
	GF 12	STANDARD TRASH RACKS	01-01-05
	GF 13	OPEN CURB INLET GRATE AND FRAME	01-01-05
	GF 14	SOLID COVER FOR STD DWG DB 1 MS-18 LOADING	01-01-05
	GF 15	STANDARD SCREW GATE AND FRAME	01-01-05
		General Road Work (GW)	
	GW 1	RAISED MEDIAN AND PLOWABLE END SECTION	01-01-05
	GW 2	CONCRETE CURB AND GUTTER	01-01-05
	GW 3	CONCRETE CURB AND GUTTER DETAILS	01-01-05
	GW 4	CONCRETE DRIVEWAYS AND SIDEWALKS	01-01-05
	GW 5A	PEDESTRIAN ACCESS	02-23-06
	GW 5B	PEDESTRIAN ACCESS	02-23-06
	GW 5C	PEDESTRIAN ACCESS	06-30-05
	GW 6	RIGHT OF WAY MARKER	06-29-06
	GW 7	NEWSPAPER AND MAILBOX STOP LAYOUT	01-01-05
	GW 8	NEWSPAPER AND MAILBOX SUPPORT HARDWARE	01-01-05
	GW 9	DELINEATION HARDWARE	01-01-05
	GW 10	DELINEATION APPLICATION	01-01-05
	GW 11	SIDEWALKS AND SHOULDERS ON URBAN ROADWAYS	01-01-05

	DWG. NO.	DESCRIPTION	DATE
		Paving (PV)	
	PV 1	JOINTS FOR HIGHWAYS WITH CONCRETE TRAFFIC LANES AND SHOULDERS	01-01-05
	PV 2	PAVEMENT/APPROACH SLAB DETAILS	01-01-05
	PV 3	CONCRETE PAVEMENT DETAILS FOR URBAN AND INTERSTATE	01-01-05
	PV 4	CONCRETE PAVEMENT DETAILS FOR URBAN AND INTERSTATE	01-01-05
	PV 5	URBAN CONCRETE PAVEMENT DETAILS	01-01-05
	PV 6	RUMBLE STRIPS	01-01-05
	PV 7	RUMBLE STRIPS-TYPICAL APPLICATION	01-01-05
	PV 8	NOT USED	
	PV 9	DOWEL BAR RETROFIT	01-01-05
		Signals (SL)	
	SL 1A	TRAFFIC SIGNAL MAST ARM POLE AND LUMINAIRE EXTENSION	02-23-06
	SL 1B	TRAFFIC SIGNAL MAST ARM POLE AND LUMINAIRE EXTENSION	02-23-06
	SL 2	TRAFFIC SIGNAL MAST ARM DETAILS 30' THRU 75'	02-23-06
	SL 3	UNDERGROUND SERVICE PEDESTAL DETAILS	02-23-06
	SL 4	TRAFFIC SIGNAL MAST ARM POLE FOUNDATION	02-23-06
	SL 5	TRAFFIC SIGNAL POLE	02-23-06
	SL 6	POLE MOUNTED POWER SOURCE DETAILS	01-01-05
	SL 7	SPAN WIRE SIGNAL POLE DETAILS	01-01-05
	SL 8	SIGNAL HEAD DETAILS	02-23-06
	SL 9	PEDESTRIAN SIGNAL ASSEMBLY	01-01-05
	SL 10	TRAFFIC SIGNAL CONTROLLER BASE DETAILS	02-23-06
	SL 11	TRAFFIC SIGNAL LOOP DETECTOR DETAILS	02-23-06
	SL 12	TRAFFIC COUNTING LOOP DETECTOR DETAILS	04-28-05
	SL 13	VIDEO DETECTION CAMERA MOUNT	02-23-06
	SL 14	HIGHWAY LUMINAIRE POLE GROUND MOUNT	08-25-05
	SL 15	LUMINAIRE SLIP BASE DETAILS	08-25-05
	SL 16	HIGHWAY LUMINAIRE POLE BARRIER MOUNT	01-01-05
	SL 17	HIGHWAY LUMINAIRE POLE FOUNDATION EXTENSION	01-01-05
	SL 18	SINGLE TRANSFORMER SUBSTATION DETAILS	01-01-05
		Signs (SN)	
	SN 1	BRIDGE LOAD LIMITS SIGNS	01-01-05
	SN 2	SCHOOL SPEED LIMIT ASSEMBLY	01-01-05
	SN 3	OVERHEAD SCHOOL SPEED LIMIT ASSEMBLY	01-01-05
	SN 4	FLASHING STOP SIGN	01-01-05
	SN 5	TYPICAL INSTALLATION FOR MILEPOST SIGNS	01-01-05
	SN 6	SPEED REDUCTION SIGN SEQUENCE	01-01-05
	SN 7	PLACEMENT OF GROUND MOUNTED SIGNS	01-01-05
	SN 8	GROUND MOUNTED TIMBER SIGN POST (P1)	04-28-05
	SN 9	GROUND MOUNTED TUBULAR STEEL SIGN POST (P2)	01-01-05
	SN 10	GROUND MOUNTED SQUARE STEEL SIGN POST (P3)	01-01-05
	SN 11	SLIPBASE GROUND MOUNTED TUBULAR STEEL SIGN POST (P4)	04-28-05
	SN 12A	GROUND MOUNTED SIGN INSTALLATION DETAILS	08-25-05
	SN 12B	GROUND MOUNTED SIGN INSTALLATION DETAILS	01-01-05
	SN 12C	GROUND MOUNTED SIGN INSTALLATION DETAILS	01-01-05

	DWG. NO.	DESCRIPTION	DATE
		Striping (ST)	
	ST 1	OBJECT MARKERS "T" INTERSECTION AND PAVEMENT TRANSITION GUIDANCE	01-01-05
	ST 2	FREEWAY CROSSOVER MARKINGS	01-01-05
	ST 3	TYPICAL PAVEMENT MARKINGS	01-01-05
	ST 4	CROSSWALKS, PARKING AND INTERSECTION APPROACHES	06-29-06
	ST 5	PAINTED MEDIAN AND AUXILIARY LANE DETAILS	02-23-06
	ST 6	PASSING/CLIMBING LANES TRAFFIC CONTROL	01-01-05
	ST 7	PAVEMENT MARKINGS AND SIGNS AT RAILROAD CROSSING	01-01-05
	ST 8	PLOWABLE PAVEMENT MARKERS	01-01-05
	ST 9	SCHOOL CROSSING AND SCHOOL MESSAGE	01-01-05
		Structures and Walls (SW)	
	SW 1A	WELDED END GUARD UNIT	01-01-05
	SW 1B	PRECAST CONCRETE CATTLE GUARD	01-01-05
	SW 2	NOISE WALL PLACEMENT AREA	01-01-05
	SW 3A	PRECAST CONCRETE NOISE WALL 1 OF 2	01-01-05
	SW 3B	PRECAST CONCRETE NOISE WALL 2 OF 2	01-01-05
	SW 4A	PRECAST CONCRETE RETAINING/NOISE WALL 1 OF 2	01-01-05
	SW 4B	PRECAST CONCRETE RETAINING/NOISE WALL 2 OF 2	02-23-06
		Traffic Control (TC)	
	TC 1A	CONSTRUCTION ZONE CHANNELIZATION DEVICES	01-01-05
	TC 1B	CONSTRUCTION ZONE SIGNING	01-01-05
	TC 2A	TRAFFIC CONTROL GENERAL	01-01-05
	TC 2B	TRAFFIC CONTROL GENERAL	01-01-05
	TC 3	TRAFFIC CONTROL PROJECT LIMIT SIGNING	01-01-05
	TC 4	TRAFFIC CONTROL URBAN INTERSECTIONS WITH ROADWAYS UNDER 50 MPH	01-01-05
	TC 5	TRAFFIC CONTROL URBAN INTERSECTIONS WITH ROADWAYS UNDER 50 MPH	01-01-05
	TC 6	TRAFFIC CONTROL PEDESTRIAN ROUTING	01-01-05
	TC 7	TRAFFIC CONTROL ROAD CLOSED, DETOUR	01-01-05
	TC 8	TRAFFIC CONTROL LANE CLOSURE	01-01-05
	TC 9	TRAFFIC CONTROL MULTILANE CLOSURE	01-01-05
	TC 10	TRAFFIC CONTROL EXPRESSWAY AND FREEWAY CROSSOVER/ TURN AROUND	01-01-05
	TC 11	TRAFFIC CONTROL EXIT RAMP GORE	06-29-06
	TC 12	TRAFFIC CONTROL ENTRANCE RAMP GORE	01-01-05
	TC 13	TRAFFIC CONTROL SHOULDER-HAUL ROAD	01-01-05
	TC 14	TRAFFIC CONTROL FLAGGING OPERATION	01-01-05
	TC 15	TRAFFIC CONTROL 2 LANE / 2 WAY SEAL COAT WITH COVER MATERIAL	01-01-05
	TC 16	TRAFFIC CONTROL PAVEMENT MARKING	01-01-05

☒ MARKED BOXES INDICATE DRAWINGS APPLICABLE TO THIS PROJECT

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/24/05	B.A.	CHANGE 1
2	04/28/05	B.A.	CHANGE 2
3	06/30/05	B.A.	CHANGE 3
4	08/25/05	B.A.	CHANGE 4
5	02/23/06	B.A.	CHANGE 6
6	06/29/06	B.A.	CHANGE 7

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JUN.29,2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JUN.29,2006 DATE
DEPUTY DIRECTOR

STANDARD DRAWING INDEX SHEET

STANDARD DRAWING TITLE

STD DWG
1-C

DGN File:L:\Standard_Drawings\Imperial\2005\Approved\Change7\Approved\sheets.dgn
06-JUL-2006

ATMS LINE STYLE LEGEND

FUTURE OR EXISTING	REQ'D	TYPE	CONDUCTOR TYPES
----#d----	——#D——	4-CONDUIT DUCT BANK (# INDICATES NUMBER OF 4-CONDUIT DUCT BANKS 1, 2, OR 4)	FIBER OPTIC
----hv#----	——HV#——	HIGH VOLTAGE CONDUIT (# INDICATES SIZE IN INCHES - 1 1/2, 2, 3, OR 4)	120, 240, OR 480VAC
----lv#----	——LV#——	LOW VOLTAGE CONDUIT (# INDICATES SIZE IN INCHES - 1 1/2, 2, 3, OR 4)	COPPER COMM OR POWER LESS THAN 120VAC
--- tal# ---	— TAL# —	TAIL CIRCUIT COMMUNICATIONS CONDUIT (# INDICATES SIZE IN INCHES - 1 1/2, 2, 3, OR 4)	FIBER OPTIC OR COPPER COMM
--- spr# ---	— SPR# —	SPARE CONDUIT (# INDICATES SIZE IN INCHES - 1 1/2, 2, 3, OR 4)	EMPTY
----xc-----		EXISTING CONDUIT	UNKNOWN OR AS SPECIFIED
--- ohp ----	——OHP——	OVERHEAD POWER	N/A
--- ohc ----	——OHC——	OVERHEAD COMMUNICATIONS	N/A
--- ohx ----		EXISTING OVERHEAD CONDUCTORS	UNKNOWN OR AS SPECIFIED

ABBREVIATIONS

ABBREVIATION	DEFINITION
ATMS	ADVANCED TRAFFIC MANAGEMENT SYSTEM
AWG	AMERICAN WIRE GAUGE
CAB	CABINET
CAT-#	CATEGORY - (# INDICATES CATEGORY NUMBER) CONDUCTOR
CCTV	CLOSED CIRCUIT TELEVISION
COMM	COMMUNICATIONS
DLC	DETECTOR LOOP LEAD-IN CABLES
DIA	DIAMETER
FRE	FIBERGLASS REINFORCED EPOXY
GND	GROUND CONDUCTOR
GRC	GALVANIZED RIGID CONDUIT
HDPE	HIGH DENSITY POLYETHYLENE
HFC	HYBRID FIBER CABLE
HMA	HOT MIX ASPHALT
LAN	LOCAL AREA NETWORK
NID	NON-INTRUSIVE DETECTOR
NTS	NOT TO SCALE
OC	OFF CENTER
PC	POLYMER CONCRETE
PCCP	PORTLAND CEMENT CONCRETE PAVEMENT
PTCC	PAN-TILT CONTROL CABLE
PTZ	PAN/TILT/ZOOM
PWR	POWER
RMS	RAMP METER STATION
REQ'D	REQUIRED
ROW	RIGHT-OF-WAY
RPU	REMOTE PROCESSING UNIT (FOR RWIS)
RWIS	ROADWAY WEATHER INFORMATION SYSTEM
## SMF	SINGLE MODE FIBER (## INDICATES NUMBER OF STRANDS)
TMS	TRAFFIC MONITORING STATION
TOC	TRAFFIC OPERATIONS CENTER
TSC	TRAFFIC SIGNAL CONTROLLER
TYP	TYPICAL
VAC	VOLTS (ALTERNATING CURRENT)
VID	VIDEO
VMS	VARIABLE MESSAGE SIGN
WIM	WEIGHT-IN-MOTION
WP	WORKING POINT

DETAIL CALLOUT LEGEND

CALLOUT	MEANING
"X" / "Y"	SEE DETAIL "X" ON SHEET "Y"

CONDUCTOR LEGEND

CALLOUT	DEFINITION
X-Y(Z)	X=QUANTITY Y=WIRE SIZE (AWG) Z=PURPOSE

EQUIPMENT LEGEND

FUTURE OR EXISTING	REQ'D	EQUIPMENT TYPE
		TYPE I FREEWAY VARIABLE MESSAGE SIGN (VMS) ASSEMBLY
		ROADWAY WEATHER INFORMATION SYSTEM
		OMNI DIRECTIONAL ANTENNA
		YAGI DIRECTIONAL ANTENNA
		CCTV CAMERA/PTZ/POLE AND FOUNDATION
dk	D	VIDEO DETECTION
d	D	NON-INTRUSIVE DETECTOR
		DETECTOR LOOP
I-pc	I-PC	TYPE I- POLYMER CONCRETE JUNCTION BOX
II-pc	II-PC	TYPE II- POLYMER CONCRETE JUNCTION BOX
III-pc	III-PC	TYPE III- POLYMER CONCRETE JUNCTION BOX
V	V	COMMUNICATIONS VAULT
		COMMUNICATIONS HUB
		ATMS CABINET
		SIGNAL CABINET
		ADVANCED FLASHING BEACON SIGN ON POLE
		MASTARM WITH SIGNAL HEADS
		SIGNAL HEAD
		POLE
		POWER POLE
m	M	POLE MOUNTED METER
ps	PS	POWER SERVICE POINT
		UNDERGROUND SERVICE PEDESTAL
Xf	XF	POLE MOUNTED TRANSFORMER
		PAD MOUNTED TRANSFORMER
		PAD MOUNTED TRANSFORMER WITH DISCONNECT

ELECTRICAL SCHEMATIC LEGEND

FUTURE OR EXISTING	SYMBOL	EQUIPMENT
		BREAKER
M	M	METER
N	N	NEUTRAL LUG
EG	EG	EQUIPMENT GROUND LUG
		GROUND ROD
		TRANSFORMER
		BLADE SWITCH
		FUSE

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	DRAWING COMPLETELY REVISED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

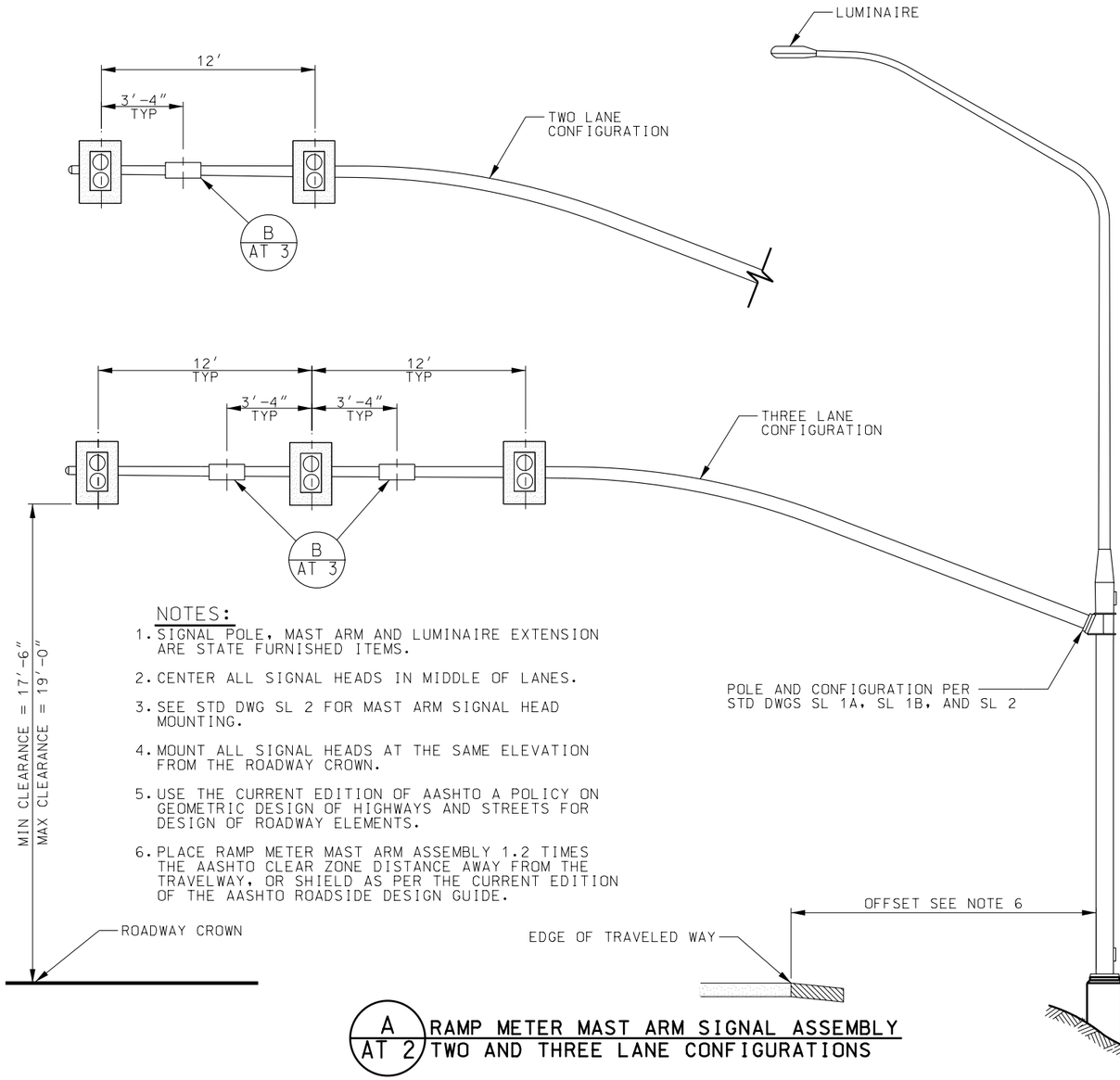
RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.24,2005 DATE
DEPUTY DIRECTOR

LEGEND SHEET

STANDARD DRAWING TITLE

STD DWG
AT 1

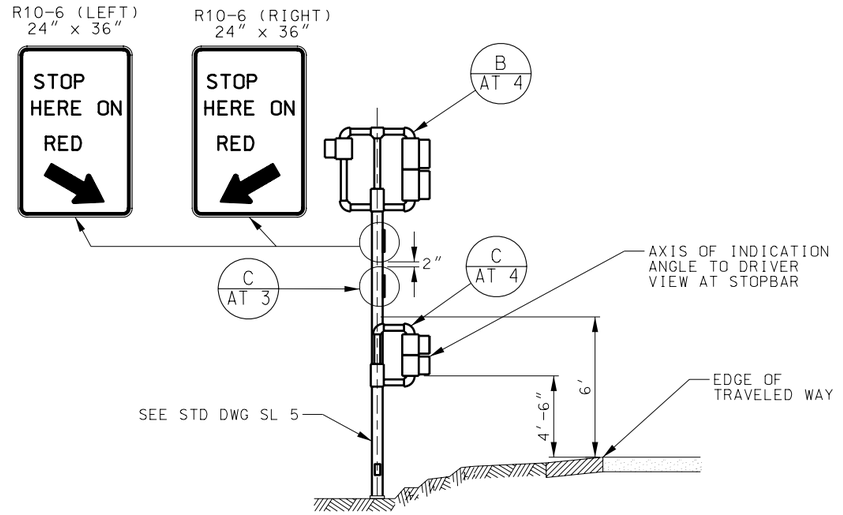
DGN File: N:\Esd\Standard Drawings\Imperial\2005Approved\xChanges\Approved\sa01.dgn
14-MAR-2005



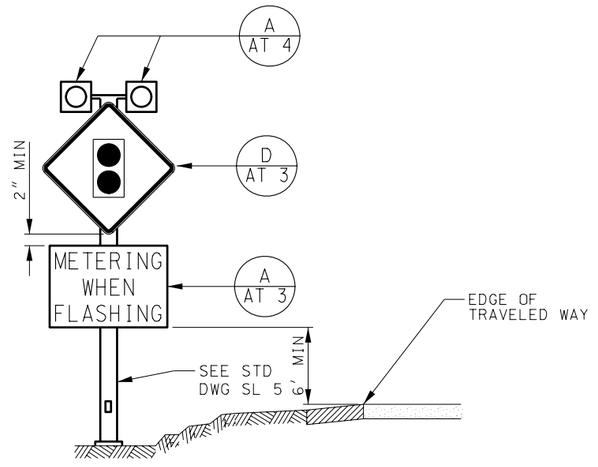
NOTES:

1. SIGNAL POLE, MAST ARM AND LUMINAIRE EXTENSION ARE STATE FURNISHED ITEMS.
2. CENTER ALL SIGNAL HEADS IN MIDDLE OF LANES.
3. SEE STD DWG SL 2 FOR MAST ARM SIGNAL HEAD MOUNTING.
4. MOUNT ALL SIGNAL HEADS AT THE SAME ELEVATION FROM THE ROADWAY CROWN.
5. USE THE CURRENT EDITION OF AASHTO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS FOR DESIGN OF ROADWAY ELEMENTS.
6. PLACE RAMP METER MAST ARM ASSEMBLY 1.2 TIMES THE AASHTO CLEAR ZONE DISTANCE AWAY FROM THE TRAVELWAY, OR SHIELD AS PER THE CURRENT EDITION OF THE AASHTO ROADSIDE DESIGN GUIDE.

A / AT 2 RAMP METER MAST ARM SIGNAL ASSEMBLY
TWO AND THREE LANE CONFIGURATIONS



B / AT 2 RAMP METER POLE MOUNT SIGNAL ASSEMBLY
WITH ENFORCEMENT INDICATION



C / AT 2 RAMP METER ADVANCED
FLASHING BEACON ASSEMBLY

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REVISED "ADVANCED FLASHING BEACON ASSEMBLY" DETAIL AND ADDED 3 LANE MAST ARM ASSEMBLY.

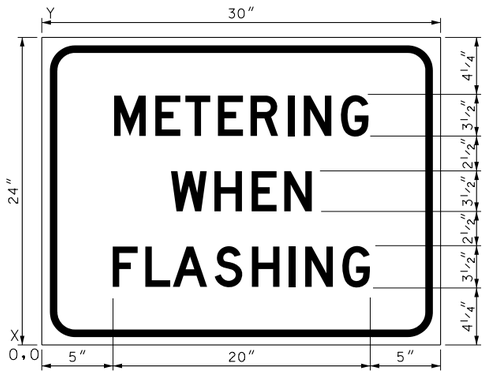
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.24,2005 DATE
DEPUTY DIRECTOR

RAMP METER DETAILS

STANDARD DRAWING TITLE

STD DWG
AT 2

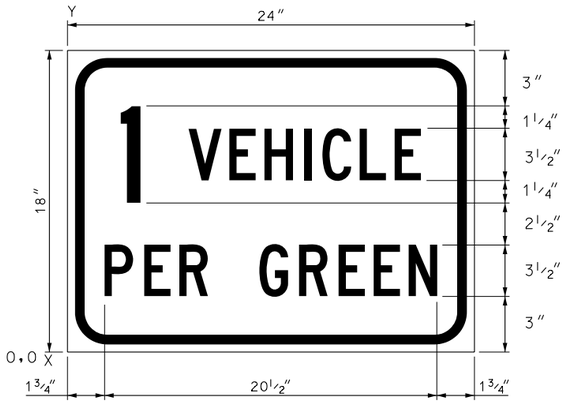


WIDTH x HEIGHT	30″ x 24″
EDGE TO BORDER	3/8″
BORDER WIDTH	5/8″
CORNER RADIUS	2″
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: YELLOW
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

COORDINATES ARE TO LOWER LEFT CORNERS

Y FONT	LETTER POSITIONS (X)								HT LEN
15 1/2	M	E	T	E	R	I	N	G	3 1/2
D	5	8 1/4	10 5/8	13 1/8	15 3/4	18 5/8	20	23	20
9 3/4	W	H	E	N					3 1/2
D	9 1/2	13	15 3/4	18 1/4					11
4	F	L	A	S	H	I	N	G	3 1/2
D	5	7 1/2	9 5/8	13	15 3/4	18 3/4	20	23	20 1/4

A AT 3 METERING WHEN FLASHING SIGN DETAIL



WIDTH x HEIGHT	24″ x 18″
EDGE TO BORDER	3/8″
BORDER WIDTH	5/8″
CORNER RADIUS	2″
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: WHITE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

COORDINATES ARE TO LOWER LEFT CORNERS

Y FONT	LETTER POSITIONS (X)								HT LEN
10 1/4	V	E	H	I	C	L	E		3 1/2
C	7	9 3/8	11 5/8	14	15 1/8	17 3/8	19 5/8		14 1/4
9	1								6
C	2 3/4								1 1/4
3	P	E	R	G	R	E	E	N	3 1/2
C	1 3/4	4 1/4	6 3/8	11 1/4	13 3/4	16 1/8	18 1/4	20 3/8	20 1/2

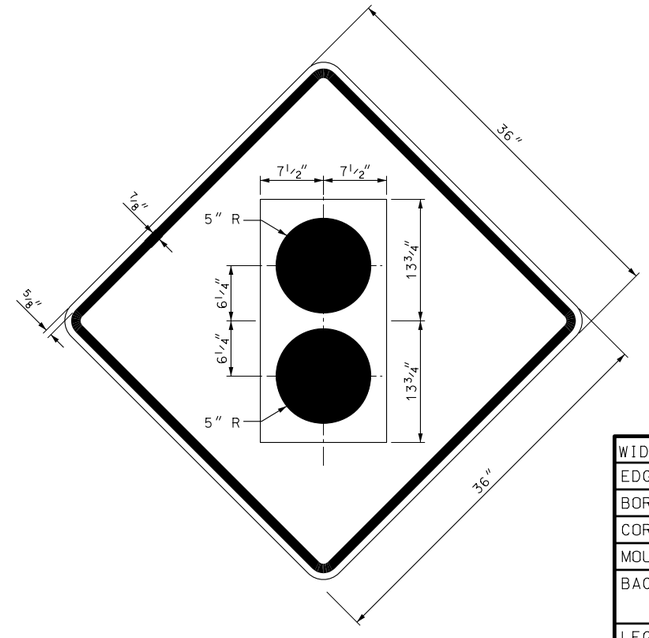
C AT 3 1 VEHICLE PER GREEN SIGN DETAIL

WIDTH x HEIGHT	60″ x 36″
EDGE TO BORDER	3/8″
BORDER WIDTH	5/8″
CORNER RADIUS	2″
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: WHITE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

COORDINATES ARE TO LOWER LEFT CORNERS

Y FONT	LETTER POSITIONS (X)								HT LEN
24 1/2	V	E	H	I	C	L	E		6
EM	16 1/4	23	28 5/8	35	37 3/4	43 3/4	49 1/4		37 1/2
23 1/2	1								6
EM	6 1/8								2 1/2
14 1/2	P	E	R	G	R	E	E	N	6
EM	4 1/4	10 5/8	16 1/4	27	33 1/4	39 1/2	45 1/4	50 3/4	51 1/4
4 1/2	E	A	C	H	L	A	N	E	6
EM	4	9 1/4	16 1/2	22 1/2	33 1/8	38	45 1/4	51 1/2	52

B AT 3 1 VEHICLE PER GREEN EACH LANE SIGN DETAIL



WIDTH x HEIGHT	36″ x 36″ (DIAGONAL)
EDGE TO BORDER	5/8″
BORDER WIDTH	7/8″
CORNER RADIUS	2 1/4″
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: YELLOW
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK
TOP CIRCLE	TYPE: REFLECTIVE
	COLOR: RED
BOTTOM CIRCLE	TYPE: REFLECTIVE
	COLOR: GREEN

D AT 3 WS3-3 RAMP METER AHEAD

NO.	DATE	APPR.	REMARKS
1	02/24/05	S.S.	ENTIRE DRAWING REVISED.

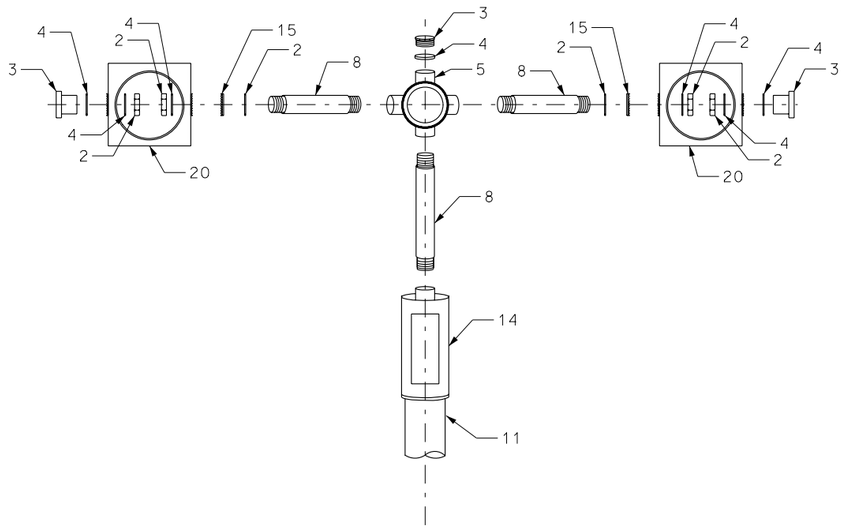
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.24.2005 DATE
DEPUTY DIRECTOR

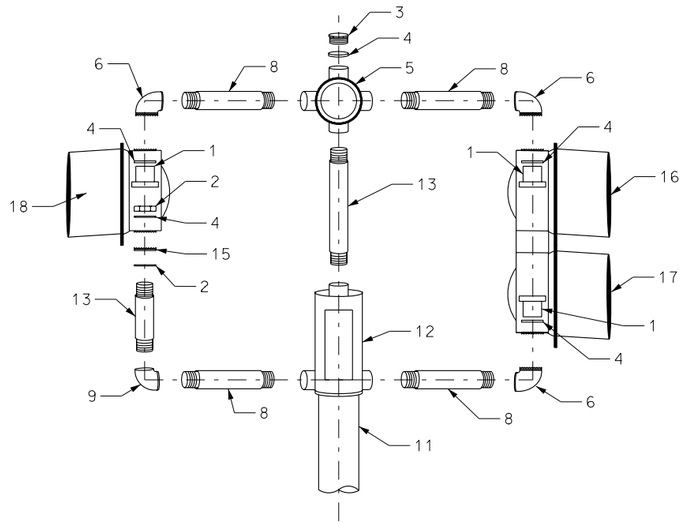
RAMP METER SIGN PANEL
STANDARD DRAWING TITLE

STD DWG
AT 3

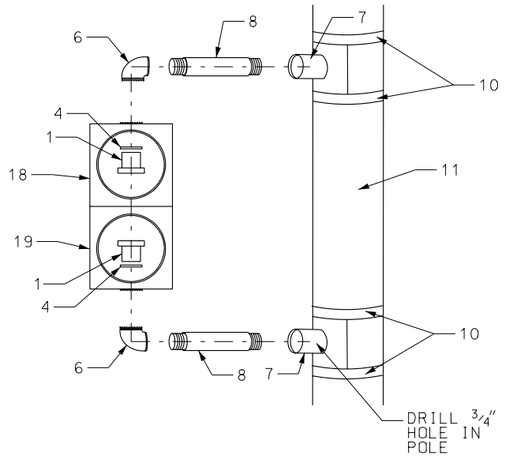
DGN File:N:\Esd\Standard_Drawings\Imperial\2005Approved\ChangeApproved\as03.dgn
14-MAR-2005



A AT 4 ADVANCE FLASHING BEACON SIGNAL HEAD MOUNTING DETAILS



B AT 4 TOP SIGNAL HEAD MOUNTING DETAILS WITH ENFORCEMENT INDICATION



C AT 4 SIDE SIGNAL HEAD MOUNTING DETAILS

DETAIL LEGEND

1. LOCK NIPPLE, BRASS, $1\frac{1}{2}$" x $1\frac{3}{4}$"
2. LOCK NUT, BRASS, $1\frac{1}{2}$"
3. CAP, ORNAMENTAL, LONG, BRASS, $1\frac{1}{2}$" x $1\frac{3}{4}$"
4. WASHER, STAINLESS STEEL
5. HUB, CENTER W/COVER PLATE 4-WAY, BRASS
6. ELBOW, 90°, GAVANIZED, THREADED INSIDE, $1\frac{1}{2}$" SERRATED
7. ROUND POLE PLATE, GALVANNIZED
8. PIPE, GALVANIZED, THREADED BOTH ENDS, $1\frac{1}{2}$" x 12",
9. ELBOW, 90°, GALVANIZED, THREADED INSIDE, $1\frac{1}{2}$"
10. BANDS, STAINLESS STEEL, $\frac{3}{4}$"
11. POLE SHAFT
12. POST TOP TERMINAL COMPARTMENT, 2 WAY, BRASS, WITH NO TERMINAL BLOCK
13. PIPE, GALVANIZED, LENGTH VARIABLE, THREADED BOTH ENDS, $1\frac{1}{2}$"
14. POST TOP TERMINAL COMPARTMENT, BRASS, WITH NO TERMINAL BLOCK
15. WASHER, SERRATED, $1\frac{1}{2}$"
16. SIGNAL HEAD - RED LED, 12"
17. SIGNAL HEAD - GREEN LED, 12"
18. SIGNAL HEAD - RED LED, 8"
19. SIGNAL HEAD - GREEN LED, 8"
20. SIGNAL HEAD - AMBER LED, 8"

NOTE:

1. ALL EXTERIOR SURFACES TO BE POWDER COATED YELLOW.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	04/28/05	S.S.	UPDATED AND REARANGED DETAILS.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

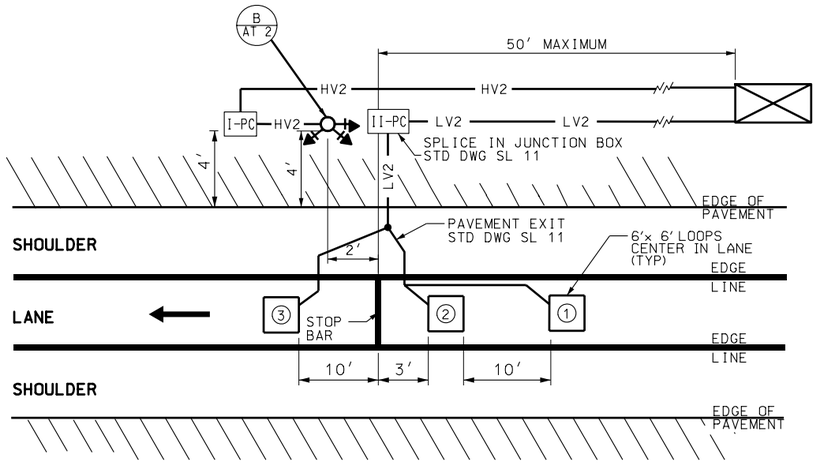
RECOMMENDED FOR APPROVAL — APR.28.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — APR.28.2005 DATE
DEPUTY DIRECTOR

TYPICAL RAMP METER SIGNAL HEAD MOUNTING

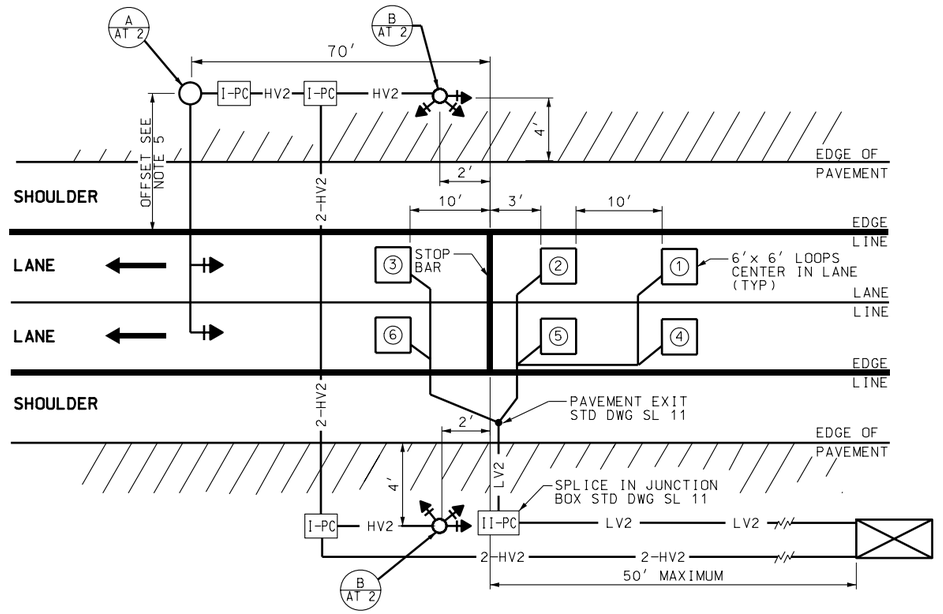
STANDARD DRAWING TITLE

STD DWG AT 4

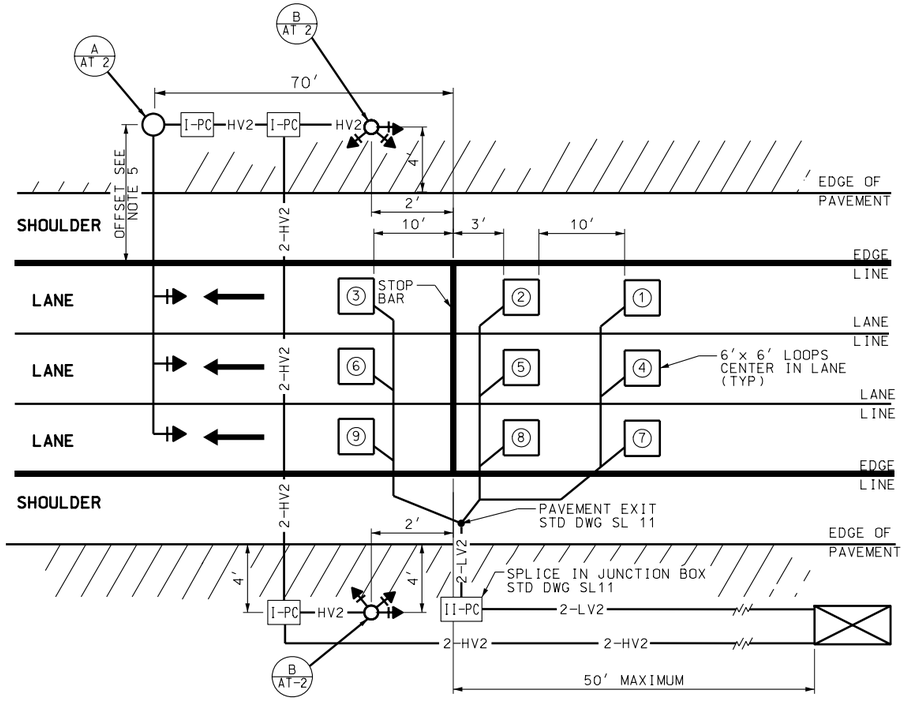
10-MAY-2005 DGN File: L:\Standard Drawings\Imperial\2005Approved\xChange2Approved\sa04.dgn



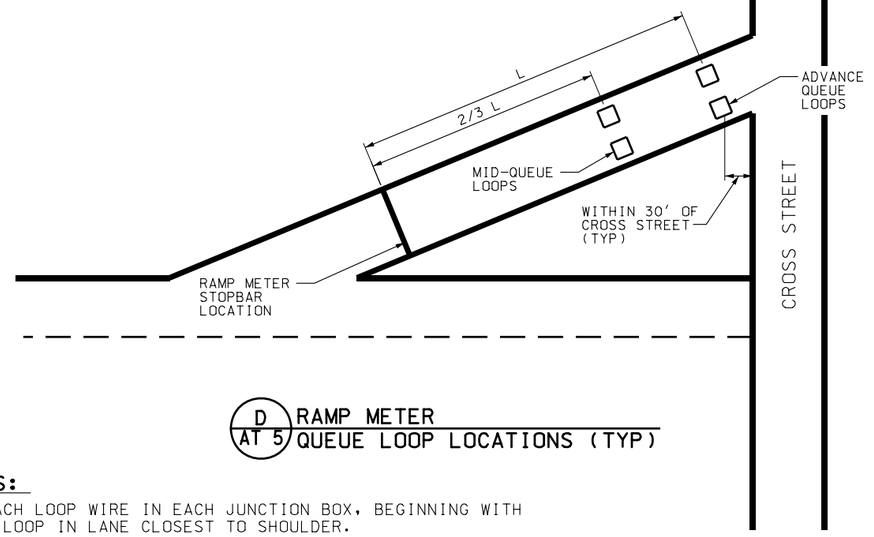
A AT 5 ONE LANE RAMP METER LOOP INSTALLATION DETAIL



B AT 5 TWO LANE RAMP METER LOOP INSTALLATION DETAIL



C AT 5 THREE LANE RAMP METER LOOP INSTALLATION DETAIL



D AT 5 RAMP METER QUEUE LOOP LOCATIONS (TYP)

NOTES:

1. TAG EACH LOOP WIRE IN EACH JUNCTION BOX, BEGINNING WITH FIRST LOOP IN LANE CLOSEST TO SHOULDER.
2. USE THE CURRENT EDITION OF AASHTO ROADSIDE DESIGN GUIDE FOR CLEAR ZONE REQUIREMENTS. CLEAR ZONE MAY EXTEND INTO CUT OR FILL SLOPES.
3. USE PREFORMED LOOPS IN NEW ASPHALT PAVEMENT.
4. USE SEPARATE CONDUCTOR HOME RUN TO CABINET FOR ALL LOOPS.
5. PLACE RAMP METER MAST ARM ASSEMBLY 1.2 TIMES THE AASHTO CLEAR ZONE DISTANCE AWAY FROM THE TRAVEL WAY, OR SHIELD AS PER THE CURRENT EDITION OF THE AASHTO ROADSIDE DESIGN GUIDE.

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	ADDED QUEUE LOOP LOCATION DETAIL AND 3 LANE METER LOOP DETAIL. TITLE CHANGED.

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

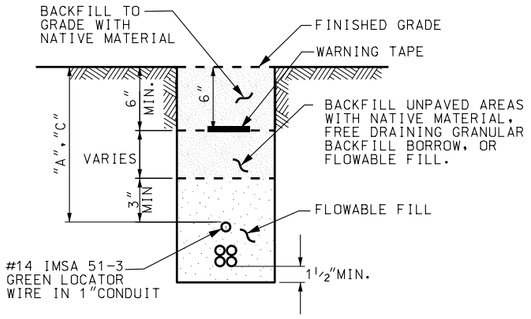
RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — FEB.24,2005 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.24,2005 DATE

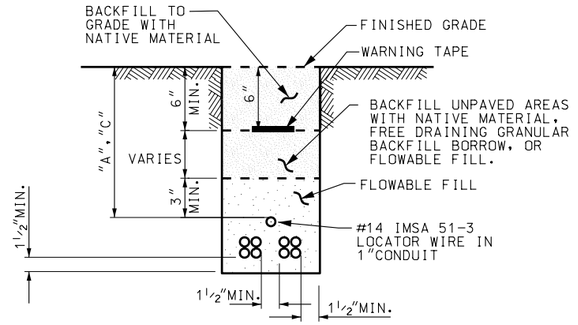
RAMP METER LOOP INSTALLATION

STANDARD DRAWING TITLE

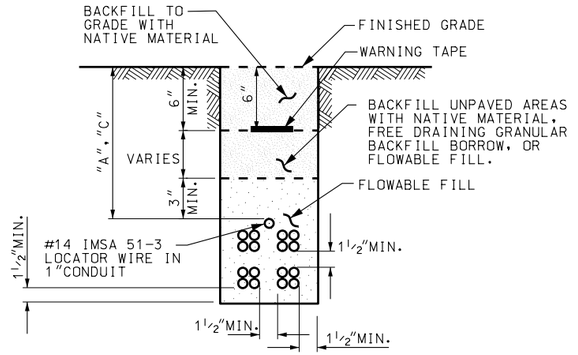
STD DWG AT 5



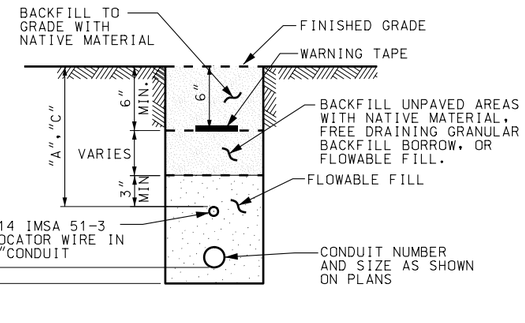
A AT 6 1-D MULTIDUCT CONDUIT



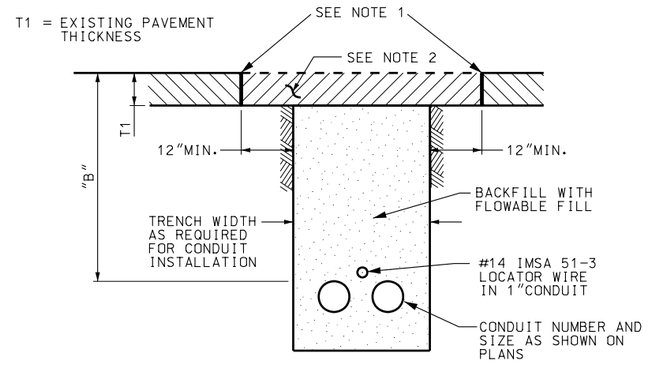
B AT 6 2-D MULTIDUCT CONDUIT



C AT 6 4-D MULTIDUCT CONDUIT



D AT 6 NON-MULTIDUCT CONDUIT



E AT 6 CONDUIT TRENCHED IN ASPHALT PAVEMENT RESTORED WITH T PATCH

TABLE 1. T PATCH RESTORATION

EXISTING ASPHALT PAVEMENT THICKNESS (T1) IN INCHES	RESTORATION T PATCH THICKNESS IN INCHES
0 – 3½	3½
3½ – 7	MATCH EXISTING DEPTH
7 OR GREATER	7

TABLE 2. MINIMUM CONDUIT DEPTH

	DEPTH IN INCHES	AREA
A	36	OUTSIDE 20 FT OF PAVEMENT EDGE
B	36	HIGHWAY RIGHT OF WAY UNDER ASPHALT PAVEMENT SURFACE
C	60	WITHIN 20 FT OF PAVEMENT EDGE

NOTES:

1. SAW CUT PAVEMENT EDGES. APPLY A HOT-POUR RUBBERIZED ASPHALT JOINT SEALANT OR APPROVED EQUAL, APPLIED AFTER PATCH IS INSTALLED.
2. USE HMA MATERIAL FOR T-PATCH. USE OPEN GRADED SEAL COAT IS REQUIRED FOR PATCHES GREATER THAN 12 FEET WIDE, AND WHERE OPEN GRADED SEAL COAT EXISTS.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REVISED MULTI-DUCT CONFIG AND T-PATCH REQUIREMENTS.

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24.2005
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.24.2005
DEPUTY DIRECTOR

CONDUIT DETAILS

STANDARD DRAWING TITLE

STD DWG
AT 6

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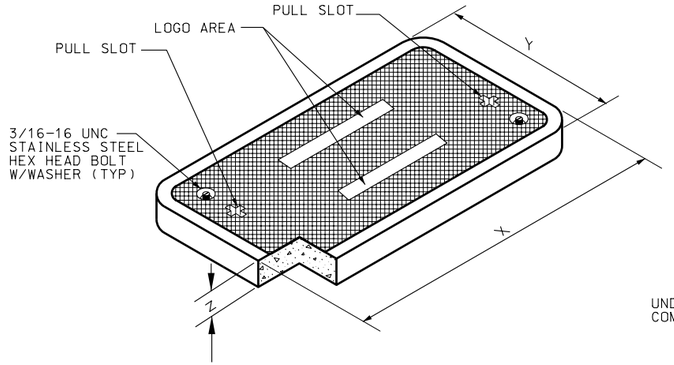
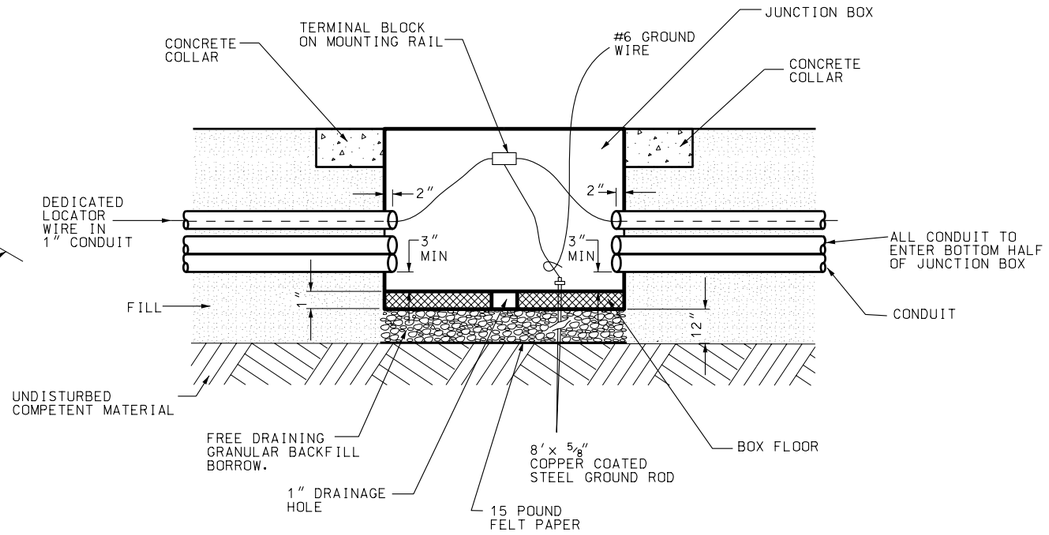
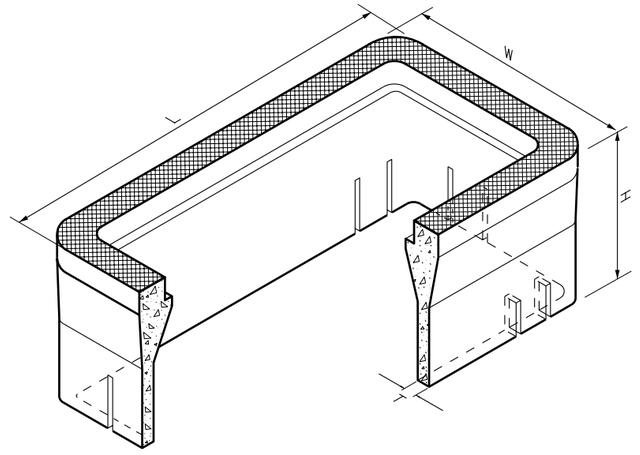
14-MAR-2005





JUNCTION BOX CONDUIT PENETRATION DETAIL

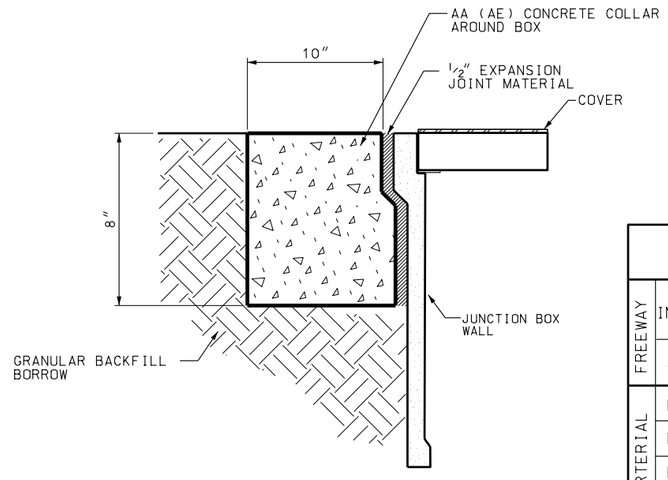


BOX AND LID DIMENSIONS

BOX TYPE	"L" inch	"W" inch	"H" inch	"T" inch	"X" inch	"Y" inch	"Z" inch
I-PC	25	16	24	1 1/2	23 1/4	13 3/4	2
II-PC	37 5/8	26	24	1 1/2	35 5/8	24	3
III-PC	49 5/8	32 1/8	24	2	47 5/8	30 1/8	3

NOTES:

1. STAMP BOX LOGO INTO THE LID FROM THE FACTORY. (SEE SECTION 13554).
2. DO NOT PLACE JUNCTION BOXES IN THE TRAVELED-WAY OR ON FREEWAY SHOULDERS.
3. CONCRETE COLLAR WIDTH VARIES WHEN ADJACENT TO ATMS CABINETS. SEE STD. DWG. AT 8.
4. PROVIDE CONCRETE COLLARS IN ALL LOCATIONS EXCEPT WITHIN PAVED AREAS.
5. INSTALL CORRECTLY SIZED CONDUIT PLUG IN EACH CONDUIT ENTERING THE JUNCTION BOX.



JUNCTION BOX CONCRETE COLLAR DETAIL

TABLE 1. FREEWAY AND ARTERIAL STREET APPLICATIONS

	APPLICATION	LOAD RATING 1
FREEWAY	INCIDENTAL TRAFFIC: PAVED GORE, PAVED AREA BEHIND SHOULDER	X
FREEWAY	ALL OTHER AREAS	X
ARTERIAL	PAVED SHOULDER OUT OF TRAFFIC	X
ARTERIAL	NON-RAISED MEDIAN, INDUSTRIAL/COMMERCIAL DRIVEWAYS	X
ARTERIAL	PARKWAY/SIDEWALK, BEHIND SIDEWALK	X
ARTERIAL	ALL OTHER AREAS	X

TABLE 2. JUNCTION BOX LID STATIC VERTICAL LOAD RATING

LOAD RATING	MINIMUM DESIGN LOAD (lb)	MINIMUM TEST LOAD (lb)	TEST AREA (inch)
1	16,000	33,500	10 x 20

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REMOVED LOAD 3 RATING BOXES AND REVISED DESIGN & TEST LOAD RATINGS.
2	Ø2/23/06	L.M.	TABLE 1 AND TABLE 2 CHANGED TO ELIMINATE LOAD RATING 2, FREEWAY AND ARTERIAL APPLICATION DETAILS REMOVED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23,2006 — DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23,2006 — DATE
DEPUTY DIRECTOR

POLYMER-CONCRETE JUNCTION BOX DETAILS

STANDARD DRAWING TITLE

STD DWG
AT 7

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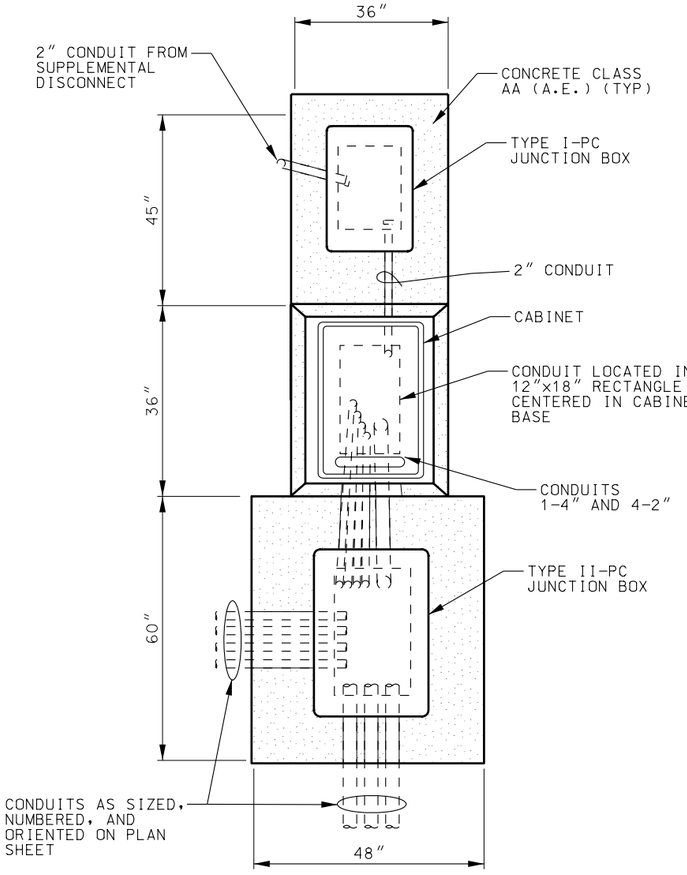
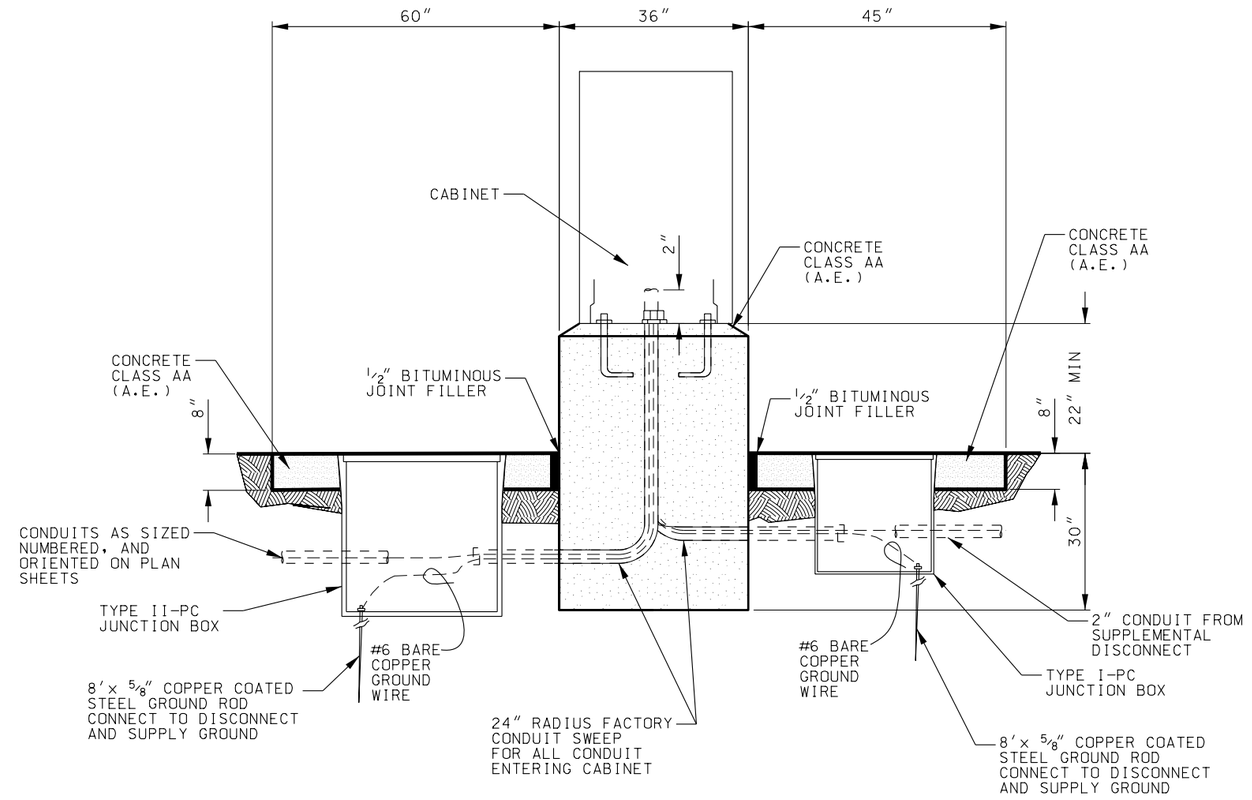
01-MAR-2006



PLAN VIEW



SIDE ELEVATION

A / AT 8 ATMS CABINET

NOTE:
1. SEE STD DWG AT 9 FOR CABINET DISCONNECT AND TRANSFORMER DETAIL.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/24/05	S.S.	ENTIRE DRAWING REVISED. TITLE CHANGED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24.2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.24.2005 DATE
DEPUTY DIRECTOR

ATMS CABINET
STANDARD DRAWING TITLE

STD DWG
AT 8

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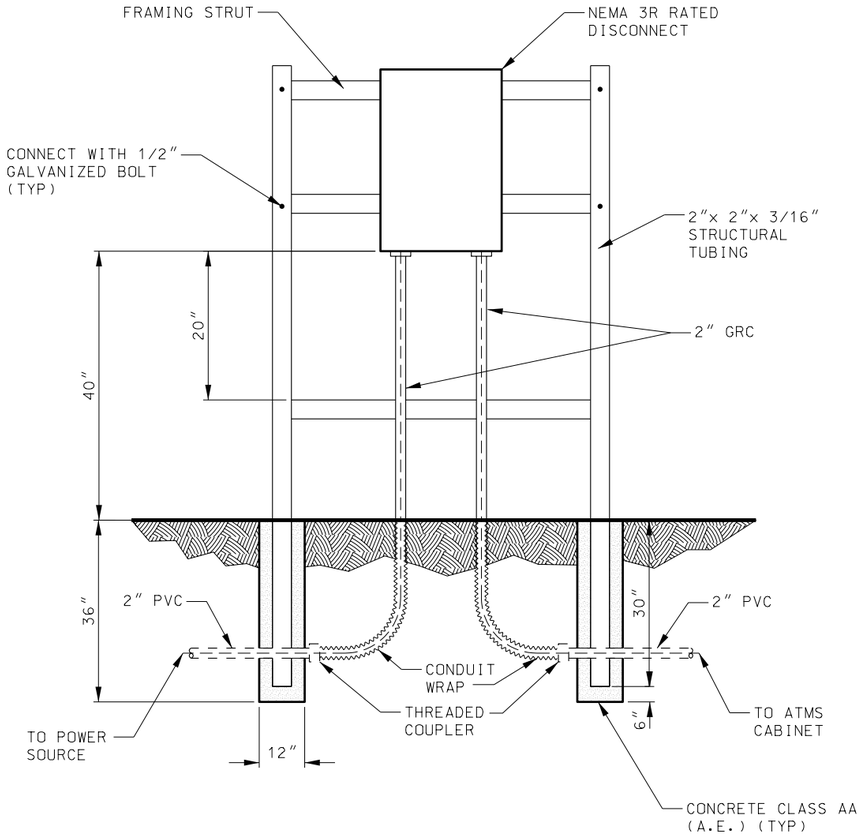
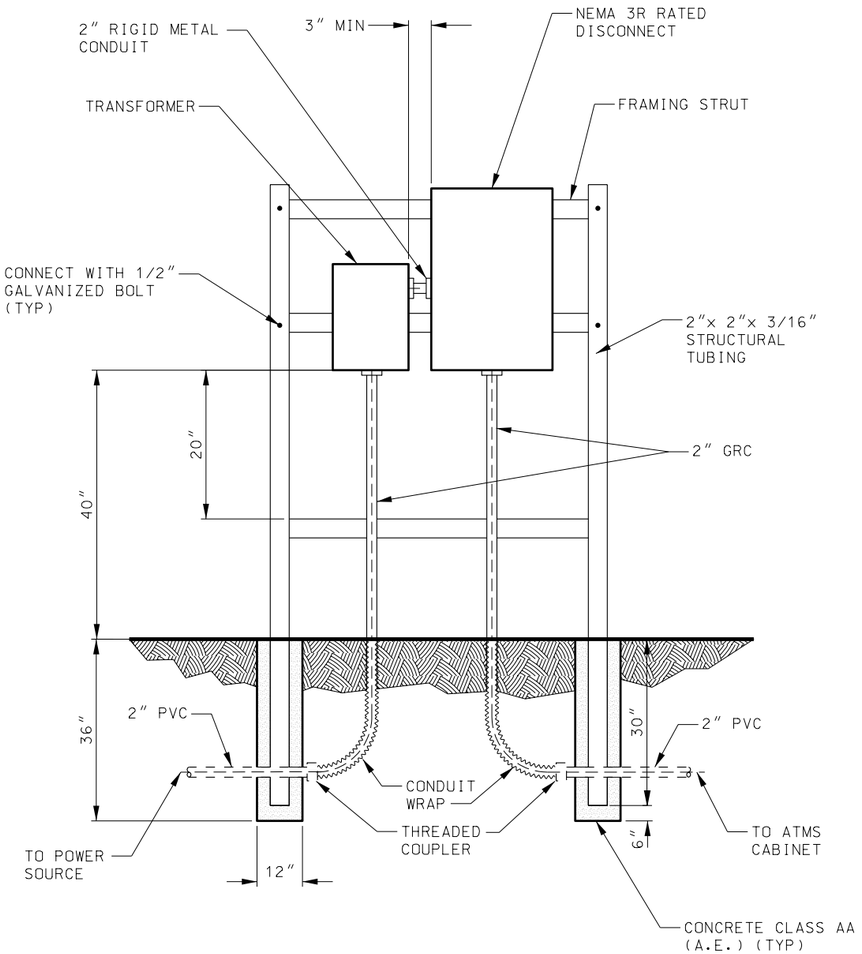
14-MAR-2005



A / AT 9 SUPPLEMENTAL DISCONNECT FRAME



B / AT 9 SUPPLEMENTAL DISCONNECT WITH TRANSFORMER FRAME

NOTE:
1. FRAME SHOULD BE LOCATED BETWEEN 10 TO 15 FEET FROM CABINET.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	DRAWING REPLACED. TITLE CHANGED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.24,2005 DATE
DEPUTY DIRECTOR

ATMS CABINET DISCONNECT AND TRANSFORMER FRAME

STANDARD DRAWING TITLE

STD DWG
AT 9

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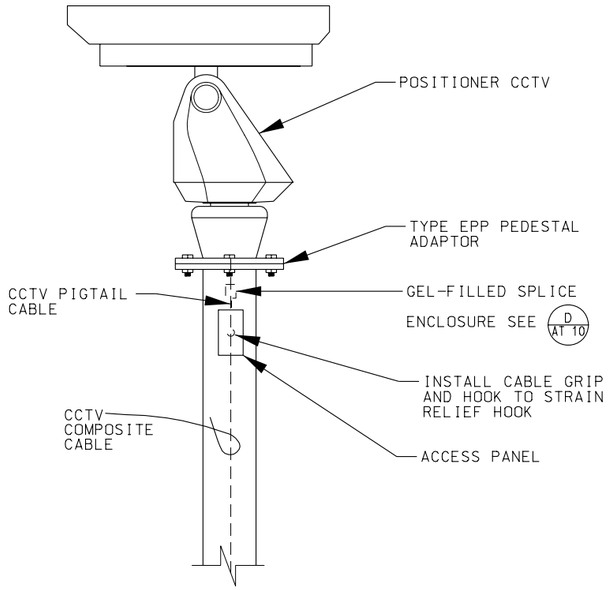
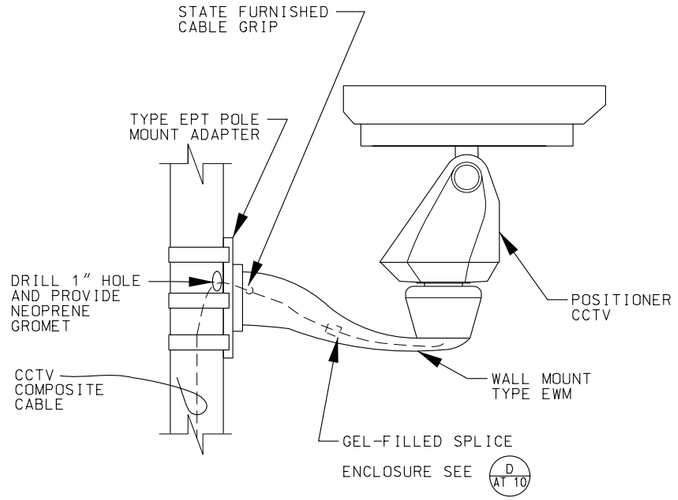
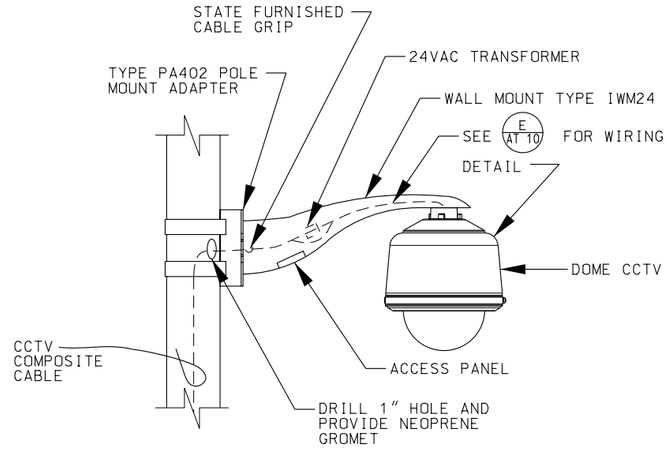
14-MAR-2005



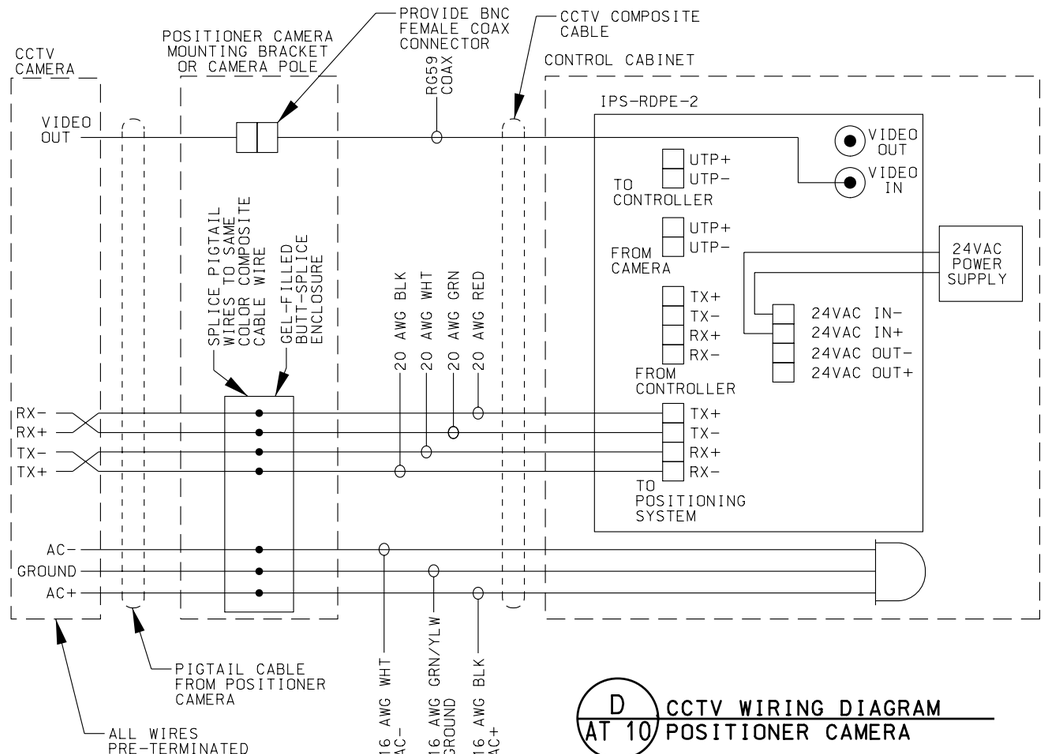
A AT 10 CCTV MOUNTING DETAIL
PEDESTAL MOUNTED POSITIONER CCTV



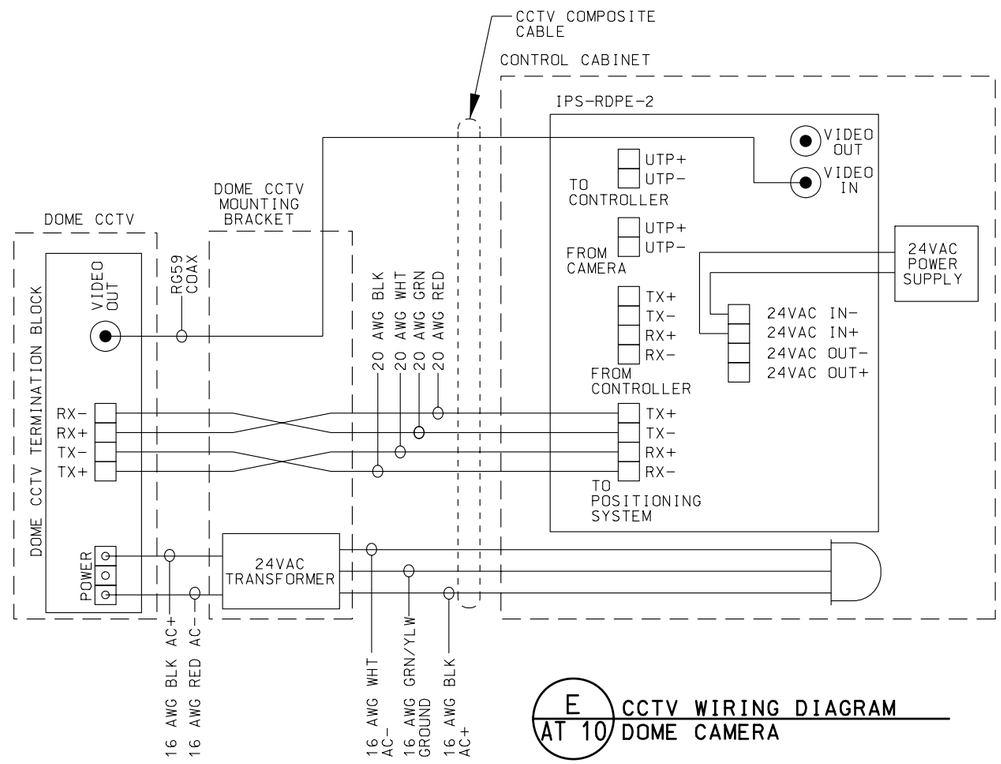
B AT 10 CCTV MOUNTING DETAIL
POLE MOUNTED POSITIONER CCTV



C AT 10 CCTV MOUNTING DETAIL
POLE MOUNTED DOME CCTV



D AT 10 CCTV WIRING DIAGRAM
POSITIONER CAMERA



E AT 10 CCTV WIRING DIAGRAM
DOME CAMERA

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REVISED CAMERA MOUNTING AND ADDED WIRING. TITLE CHANGED.

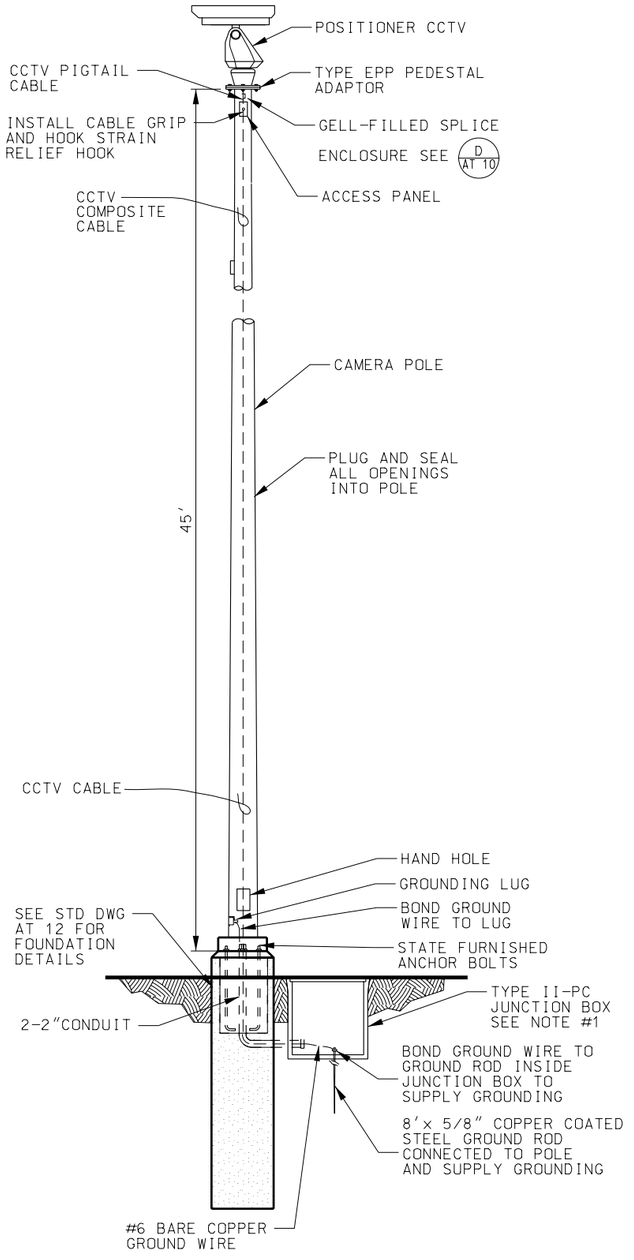
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.24,2005 DATE
DEPUTY DIRECTOR

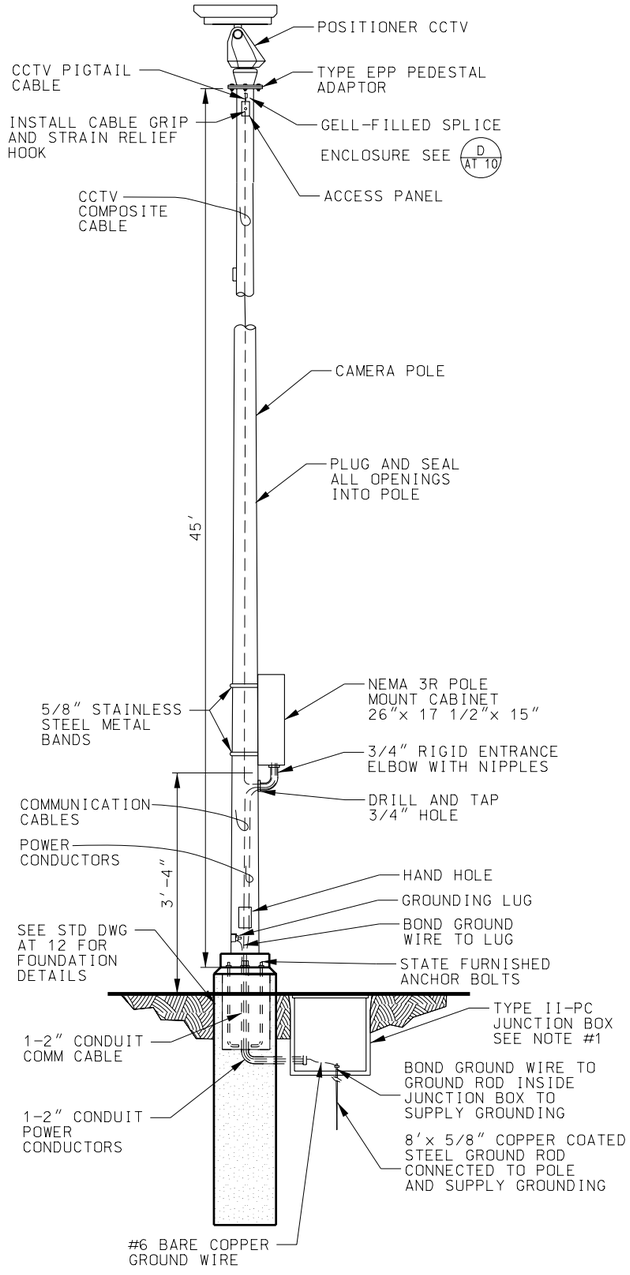
CCTV MOUNTING DETAILS
STANDARD DRAWING TITLE

STD DWG
AT 10

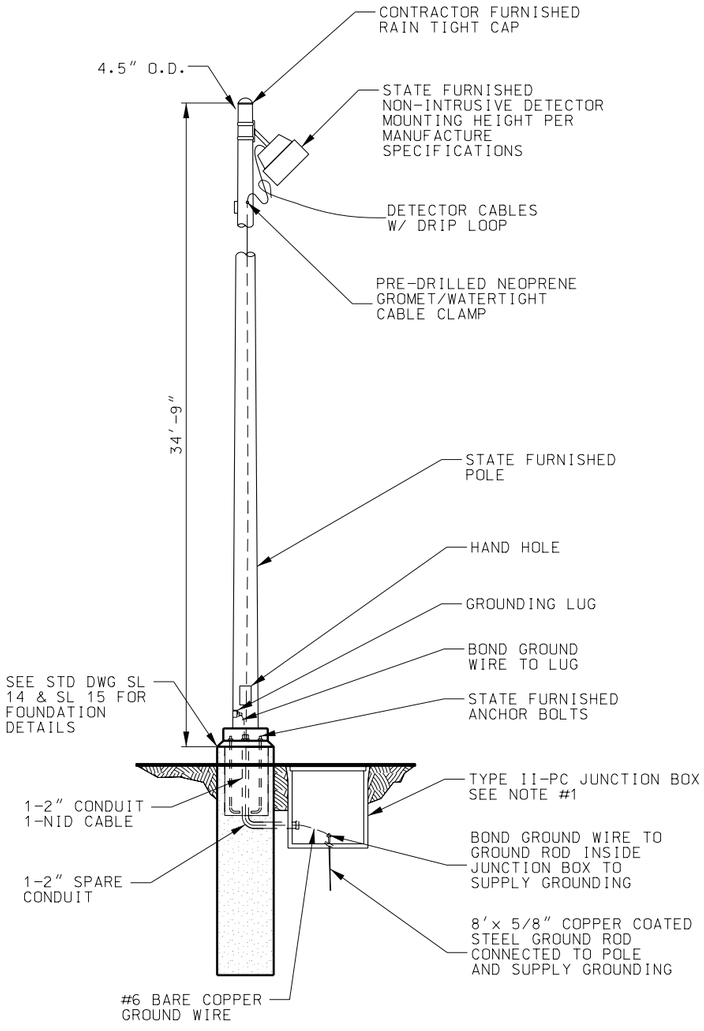
DGN File:N:\Eas\Standard Drawings\Imperial\2005approved\Changes\Approved\at10.dgn
14-MAR-2005



A AT 11 FREEWAY CCTV POLE DETAIL



B AT 11 FREEWAY CCTV POLE DETAIL WITH POLE MOUNT CABINET



C AT 11 LUMINAIRE POLE WITH NID

NOTE:
1. JUNCTION BOX REQUIRED UNLESS POLE IS WITHIN 20' OF CONTROL CABINET.
2. REFER TO AT 10 FOR MOUNTING DETAILS.

NO.	DATE	REMARKS
		REVISIONS
1	2/24/05	S.S. ENTIRE DRAWING REVISED.
1	02/23/06	L.M. UPDATED DRAWING REFERENCE AND ADDED CAP CALLOUT ON DETAIL C.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE
CHAIRMAN STANDARDS COMMITTEE
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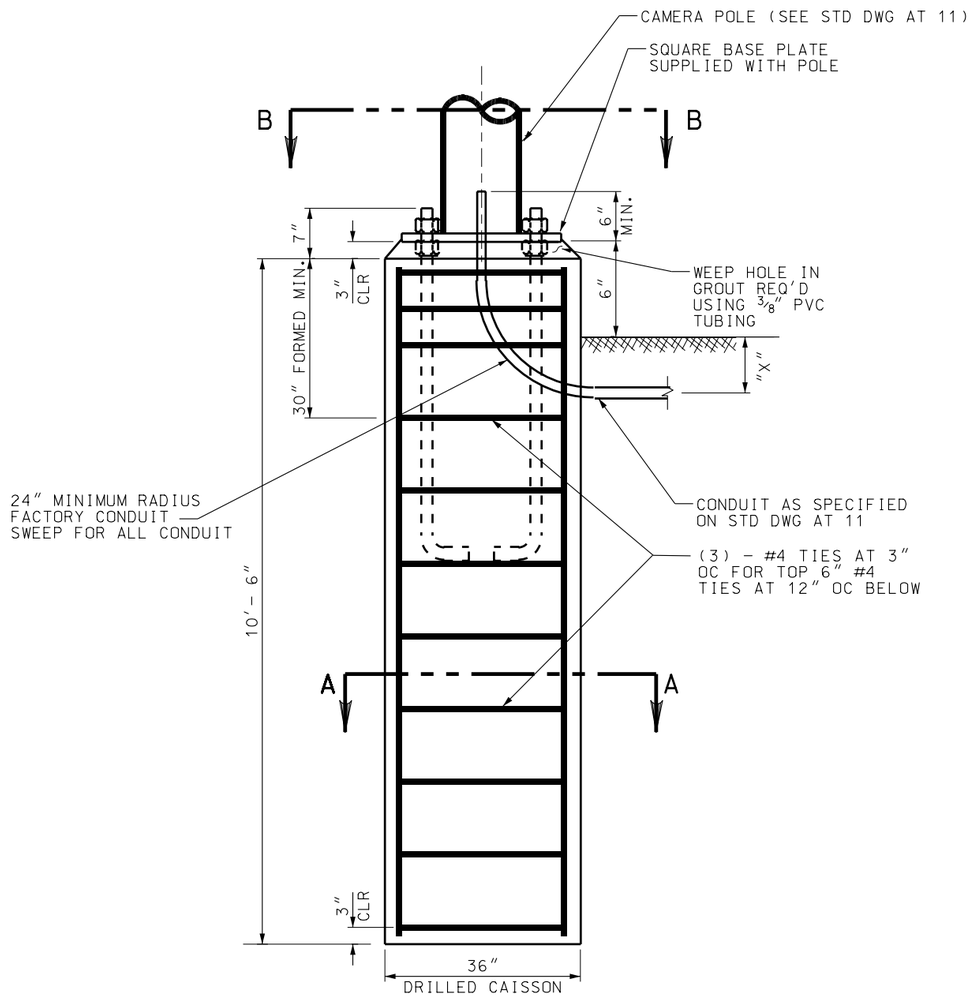
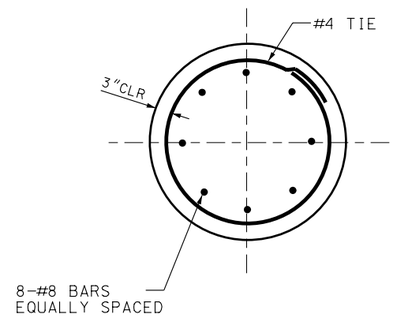
DEPUTY DIRECTOR

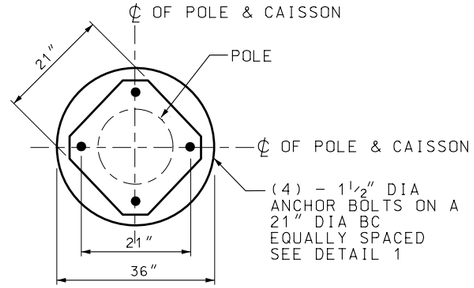
CCTV POLE DETAILS
STANDARD DRAWING TITLE

STD DWG
AT 11





SECTION A-A

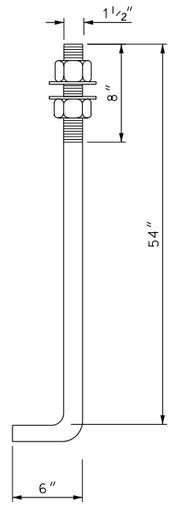


SECTION B-B

CAISSON FOUNDATION DETAILS

TABLE #1 - CONDUIT DEPTH "X"

18"	IF ENTERING ADJACENT JUNCTION BOX
AS REQUIRED BY TABLE 2 OF AT 6	IF NO ADJACENT JUNCTION BOX



(4) - ANCHOR BOLTS WITH
(2) - HEX NUTS AND 2 WASHERS

A AT 12 CCTV POLE FOUNDATION

B AT 12 ANCHOR BOLT DETAIL

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	TIE SIZE CORRECTED.

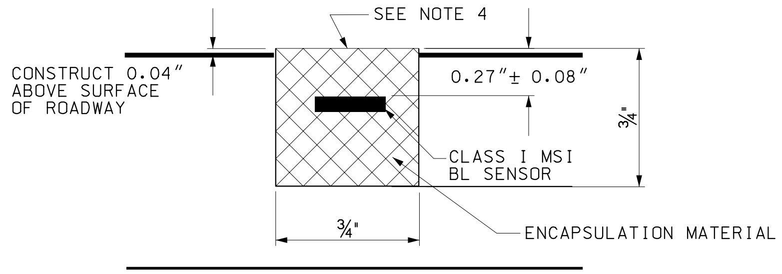
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.24.2005 DATE
DEPUTY DIRECTOR

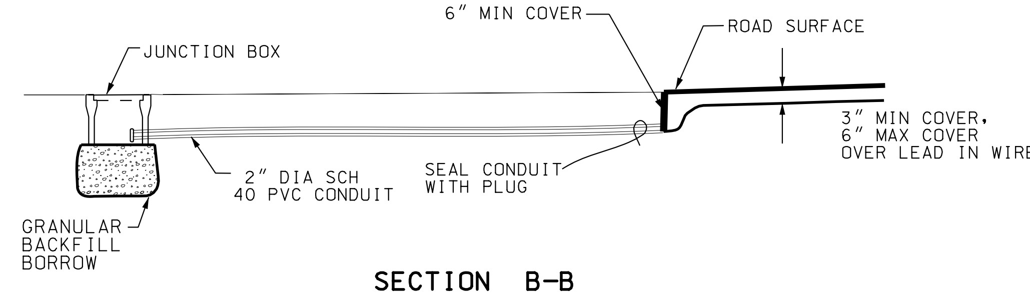
CCTV POLE FOUNDATION FOR DEDICATED CCTV POLE
STANDARD DRAWING TITLE

STD DWG
AT 12

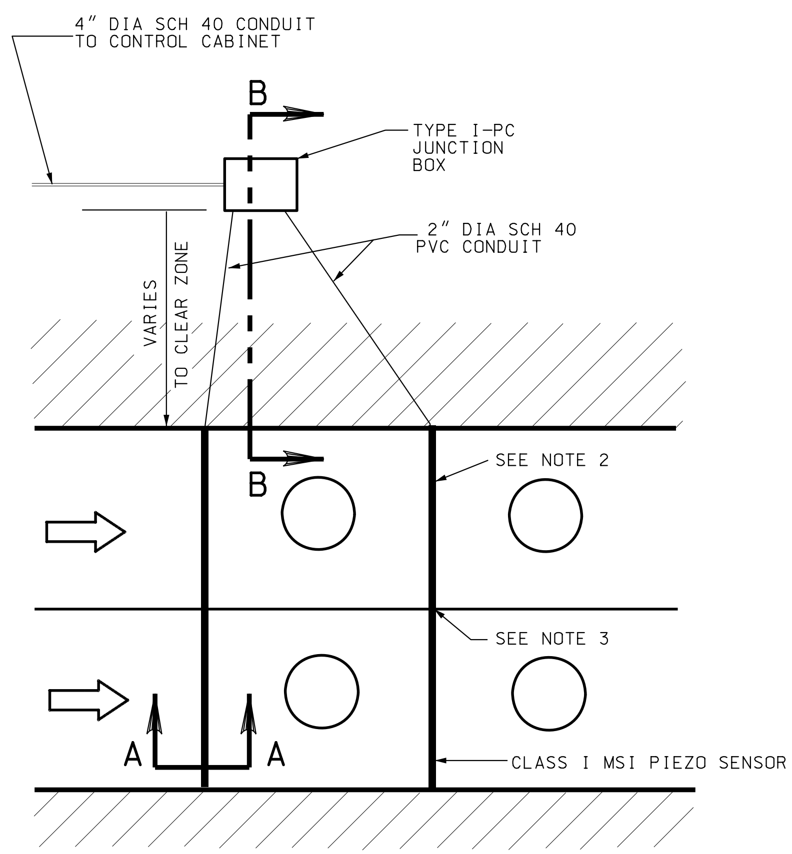
DGN File: N:\Eng\Standard Drawings\Imperial\2005Approved\xChanges\Approved\sa12.dgn
14-MAR-2005



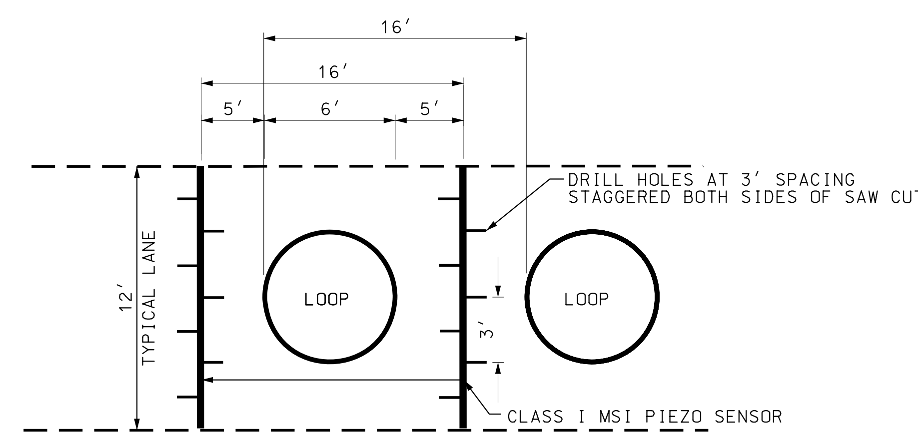
SECTION A-A



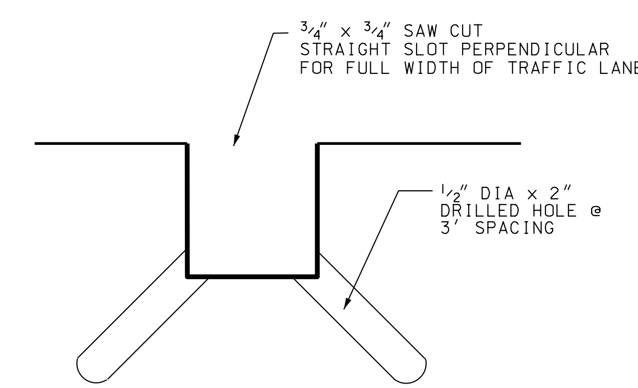
SECTION B-B



A / AT 14 DETECTOR AND PIEZO LAYOUT



B / AT 14 TYPICAL PIEZO DETAIL PLAN VIEW



C / AT 14 TYPICAL PIEZO DETAIL SIDE VIEW

NOTES:

1. REFER TO STD DWG SL 12 FOR LOOP DETECTOR DETAILS.
2. MAINTAIN 12″ MIN. SPACING BETWEEN SAW CUT, AND ANY CONCRETE JOINTS.
3. USE FLEXIBLE MATERIAL CROSSING JOINTS.
4. GRIND FLUSH WITH SURFACE AFTER CURED.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REVISED NOTES.

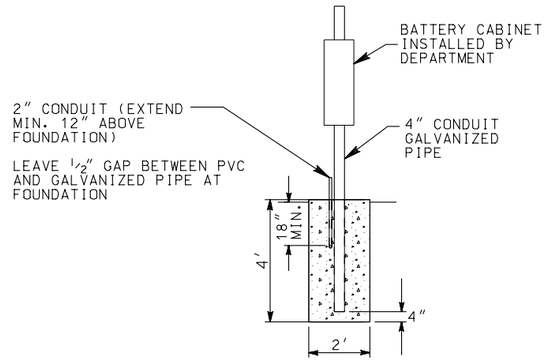
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED FEB.24,2005 DATE
DEPUTY DIRECTOR

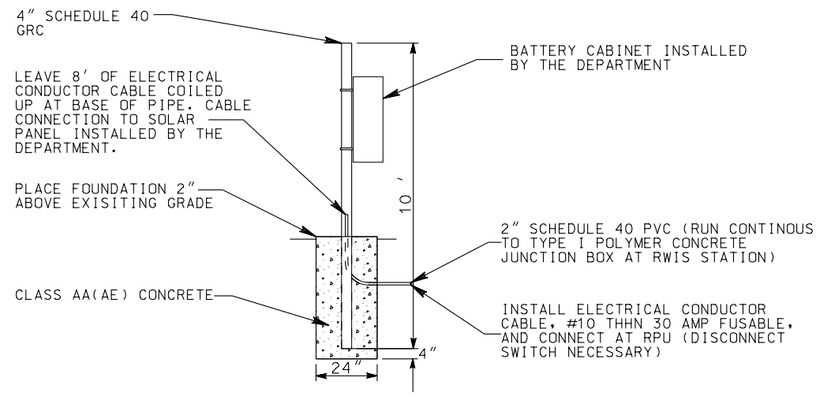
WEIGH IN MOTION PIEZO DETAILS

STANDARD DRAWING TITLE

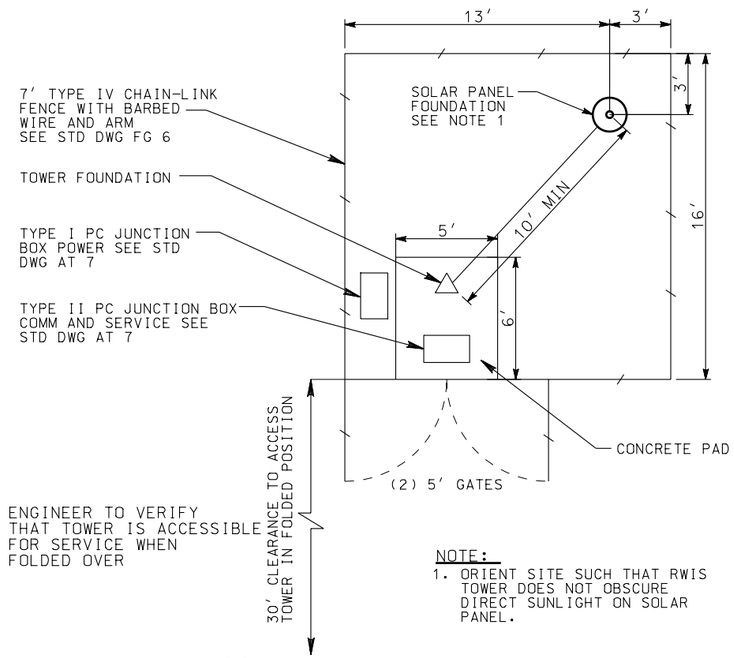
STD DWG
AT 14



A AT 15 SOLAR PANEL FOUNDATION DETAIL (FRONT VIEW)

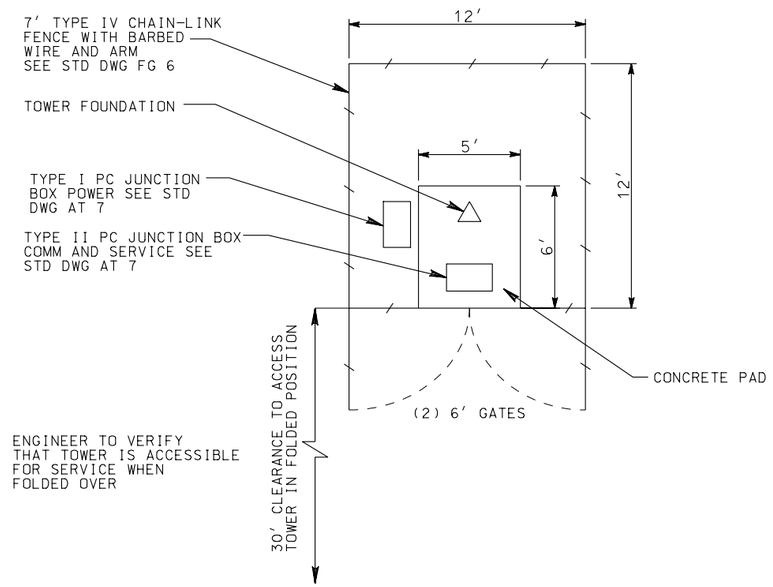


B AT 15 SOLAR PANEL FOUNDATION DETAIL (LEFT VIEW)



NOTE:
1. ORIENT SITE SUCH THAT RWIS TOWER DOES NOT OBSCURE DIRECT SUNLIGHT ON SOLAR PANEL.

C AT 15 FENCE DETAIL WITH SOLAR PANEL



D AT 15 FENCE DETAIL WITHOUT SOLAR PANEL

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REVISED DETAIL TITLES.

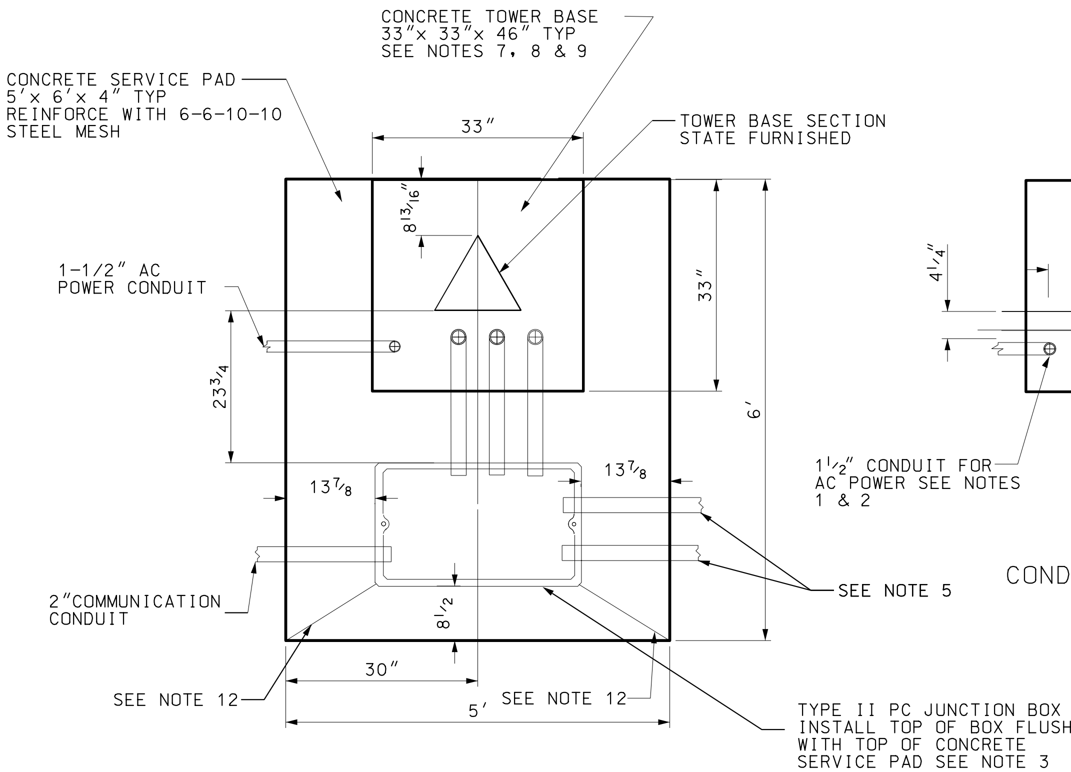
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.24,2005 DATE
DEPUTY DIRECTOR

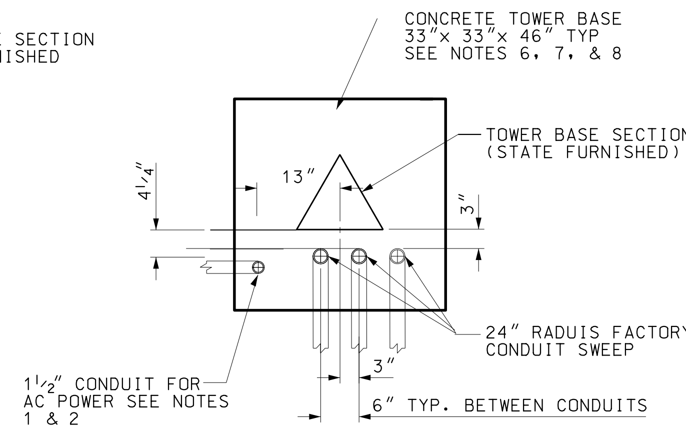
RWIS SITE AND FOUNDATION DETAILS

STANDARD DRAWING TITLE

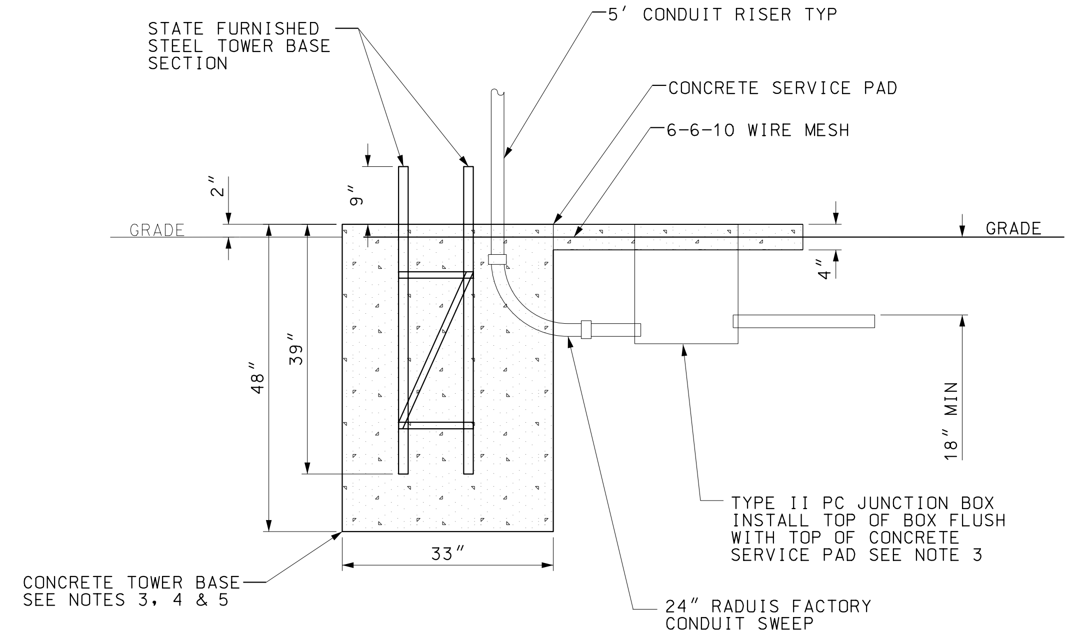
STD DWG
AT 15



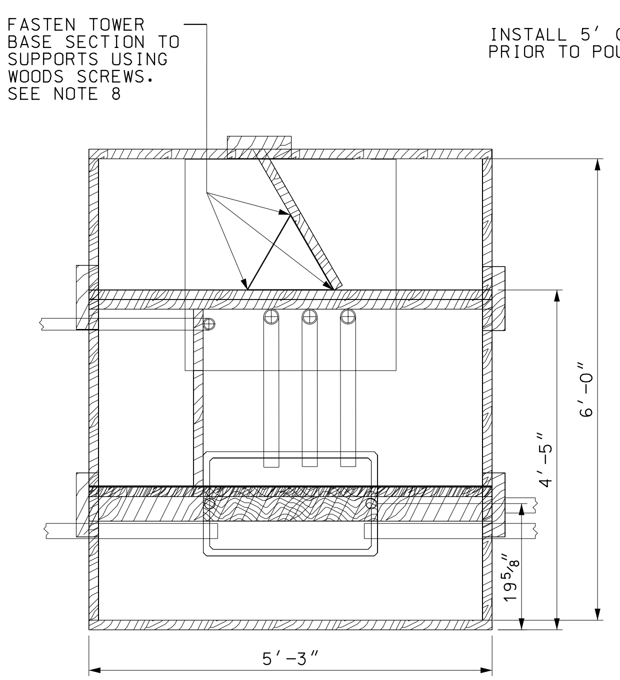
A
AT 16
RWIS TOWER BASE AND SERVICE
PAD INSTALLATION DETAIL

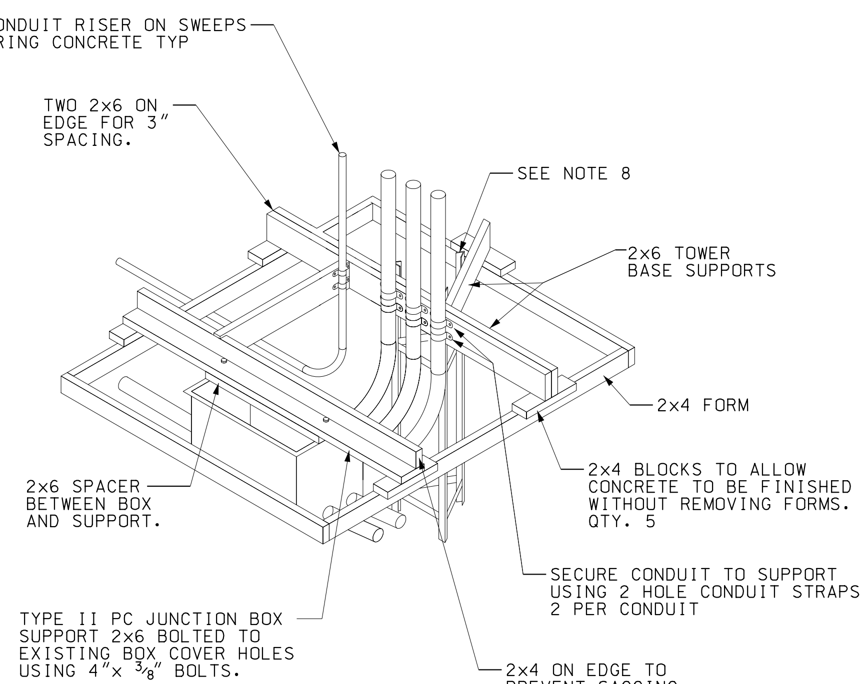


TYPICAL
CONDUIT LOCATION
DETAIL



B
AT 16
RWIS TOWER BASE AND SERVICE
PAD INSTALLATION DETAIL
LEFT SIDE VIEW





C
AT 16
RWIS TOWER BASE AND SERVICE
PAD CONCRETE FORM DETAIL

NOTES:

1. STUB OUT 1 1/2" POWER SERVICE INTO TYPE I POLYMER CONCRETE JUNCTION BOX.
2. CONDUIT LOCATIONS SHOWN ARE FOR A SQUARE D TYPE D SAFETY SWITCH, CATALOG # D221NRB.
3. INSTALL POLYMER CONCRETE JUNCTION BOXES AS PER STD DWG AT 7.
4. INSTALL ALL CONDUITS IN TOWER BASE CONCRETE TO PERMIT CONTINUATION TO RWIS ENCLOSURE.
5. STUB OUT 2" CONDUIT FROM POLYMER CONCRETE JUNCTION BOX TO BEYOND SERVICE PAD FOR SENSOR CABLES. ORIENT TOWARD NEXT JUNCTION BOX AS APPROPRIATE.
6. CONCRETE, MINIMUM CLASS AA(AE).
7. ALL SENSOR CABLES INSTALLED TO POLYMER CONCRETE JUNCTION BOX AND PULLED THROUGH 2" DIAMETER, 24" RADIUS, 90 DEGREE SWEEP FACTORY CONDUIT INTO RWIS ENCLOSURE.
8. LEVEL THE TOP OF THE TOWER BASE SECTION TO ASSURE A STRAIGHT AND PLUMB TOWER INSTALLATION.
   THE TOP OF THE TOWER BASE MUST BE 9" ABOVE THE CONCRETE PAD.
9. FINISH CONCRETE TO DRAIN WATER.
10. THE FORM DETAIL SHOWN IS TYPICAL FOR A FLAT SURFACE INSTALLATION. MODIFY AS APPROPRIATE FOR FIELD CONDITIONS.
11. CONTRACTOR IS RESPONSIBLE FOR INCORRECTLY INSTALLED OR DAMAGED STATE FURNISHED EQUIPMENT AND MATERIALS.
12. WHEN FINISHING CONCRETE SCORE A LINE FROM THE CORNER OF THE BOX TO THE CORNER OF THE CONCRETE FOR AN EXPANSION JOINT.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REVISED NOTES AND DETAIL TITLES. TITLE CHANGED.

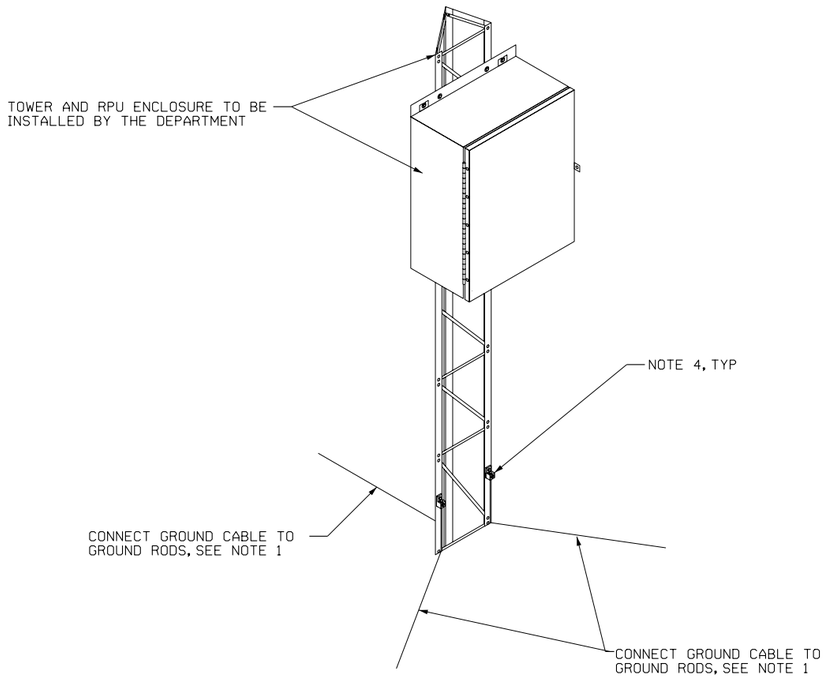
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED
DEPUTY DIRECTOR — FEB.24,2005 DATE

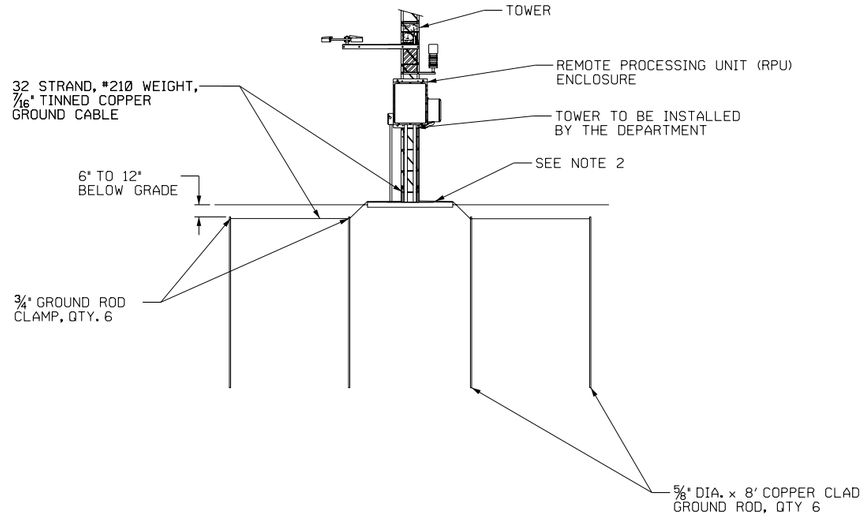
RWIS TOWER BASE AND SERVICE PAD LAYOUT

STANDARD DRAWING TITLE

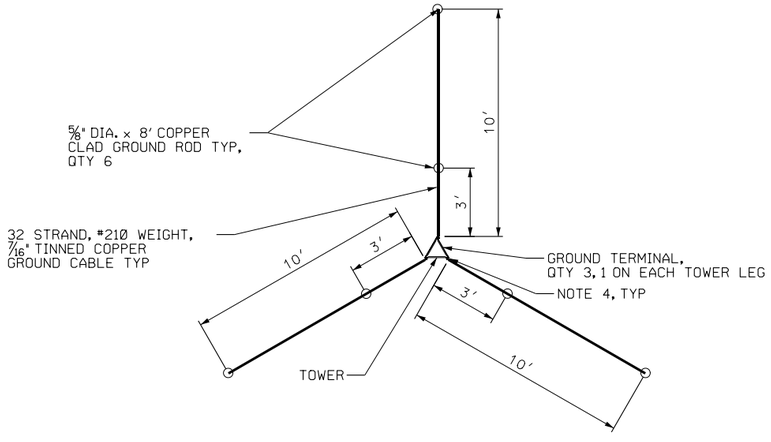
STD DWG
AT 16



A AT 17 GROUND CABLE TERMINATION DETAIL



B AT 17 GROUND CABLE TERMINATION DETAIL PROFILE VIEW



C AT 17 GROUND CABLE TERMINATION DETAIL PLAN VIEW

NOTES:

1. PLACE GROUND CABLES ON THE TOP CONCRETE PAD.
2. ANCHOR GROUND CABLES FLAT AGAINST CONCRETE PAD WITH SUITABLE CLAMPS/ANCHORS. LEAVE EXCESS WIRE TO BE ATTACHED TO TOWER BY THE DEPARTMENT.
3. DUCT SEAL UNDERGROUND CONDUIT OPENING AFTER INSTALLING GROUND WIRE.
4. INSTALL GROUNDING WIRE AND RODS ON ALL THREE LEGS. COIL 10 FEET OF WIRE ON LEG CLOSEST TO CONDUIT. COIL 5 FEET OF GROUNDING WIRE ON OTHER LEGS.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REVISED NOTES.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.24,2005 DATE
DEPUTY DIRECTOR

GROUND ROD INSTALLATION AND TOWER GROUNDING
STANDARD DRAWING TITLE

STD DWG
AT 17

A AT 18 TMS DETECTION ZONE LAYOUT (TYP)
SOUTHBOUND OR WESTBOUND

B AT 18 TMS DETECTION ZONE LAYOUT (TYP)
NORTHBOUND OR EASTBOUND

NOTES:

1. NUMBER ADDITIONAL DETECTORS INCREMENTALLY AFTER MAINLINE DETECTORS.
2. PROVIDE DETECTION LAYOUT MAP IN EACH CABINET.
3. REFER TO STD DWG SL 12 FOR LOOP DETECTION DETAILS.

LEGEND

[#] CABINET DETECTOR NUMBER ASSIGNMENT.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	NEW DRAWING.

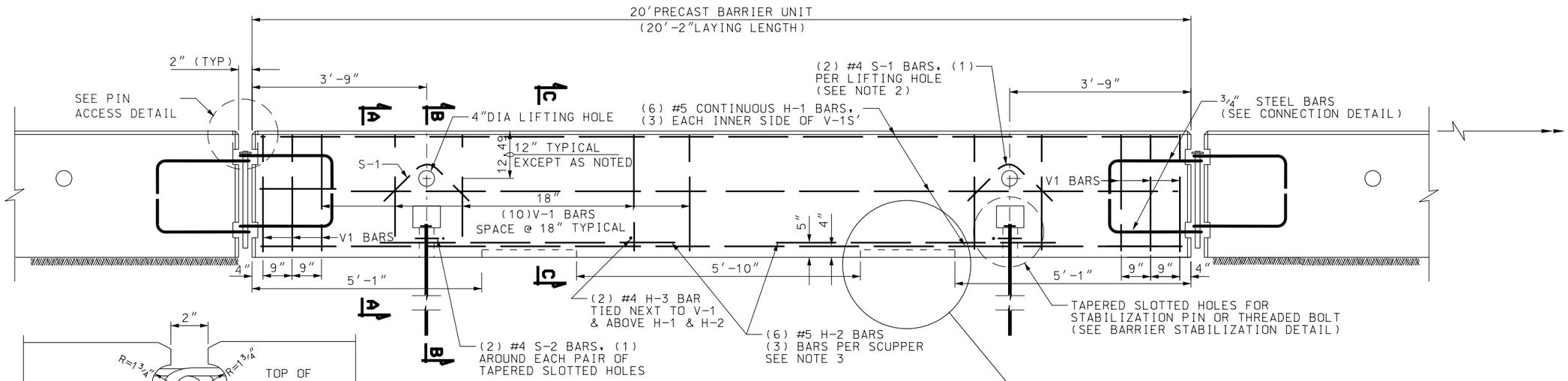
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

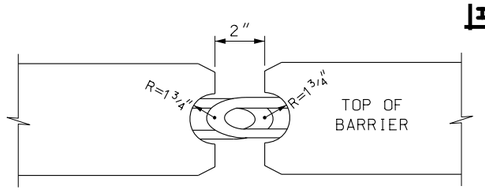
RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.24,2005 DATE
DEPUTY DIRECTOR

TMS DETECTION ZONE LAYOUT
STANDARD DRAWING TITLE

STD DWG
AT 18

DGN File: N:\Esa\Standard Drawings\Imperial\2005Approved\xChangeIApproved\at18.dgn
14-MAR-2005

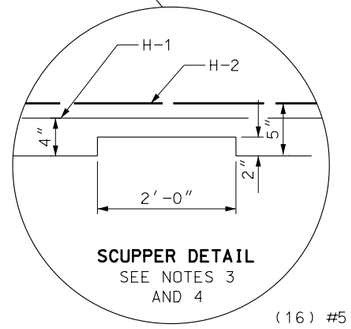




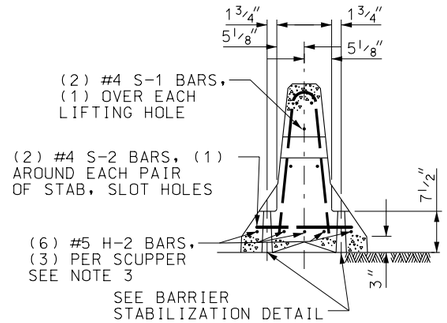
PIN ACCESS DETAIL

ELEVATION - TYPICAL BARRIER

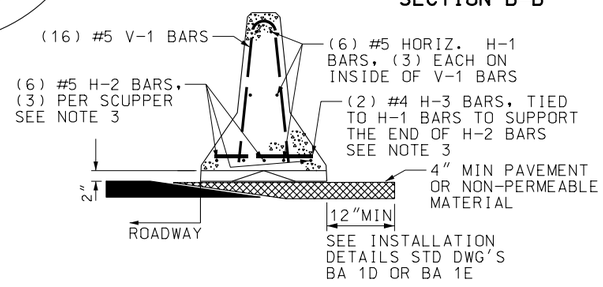
MASS: 3.9 TONS PER PANEL



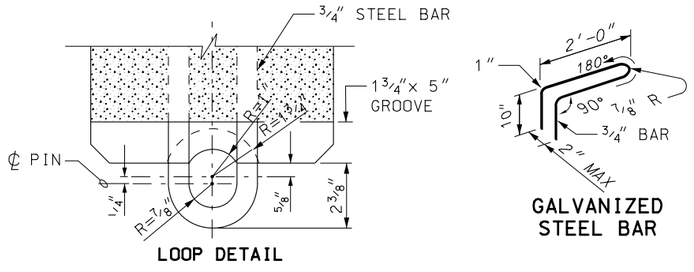
SCUPPER DETAIL
SEE NOTES 3
AND 4



SECTION B-B



SECTION C-C

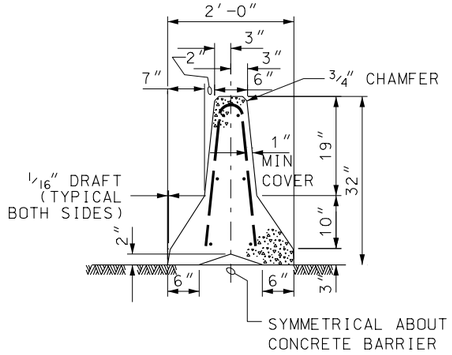


LOOP DETAIL

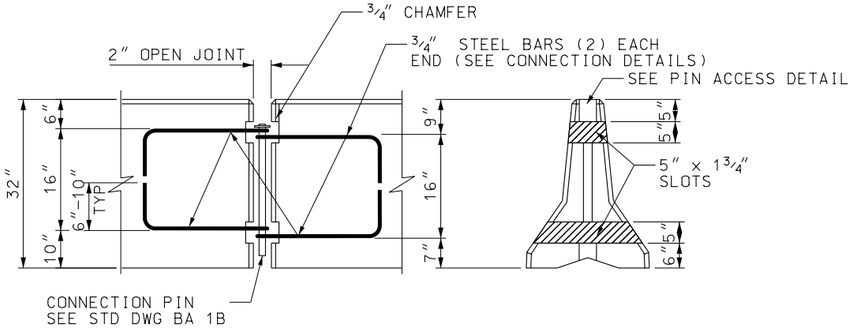
GALVANIZED
STEEL BAR

CONNECTION DETAILS

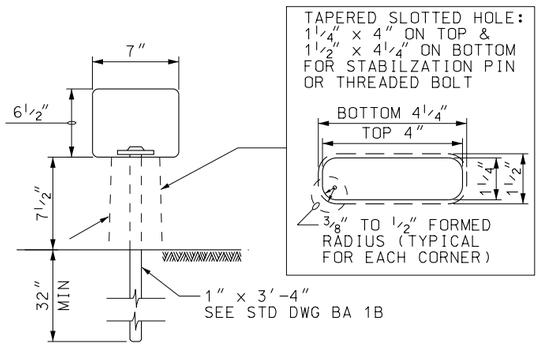
SEE BA 1B FOR PIN DETAILS



SECTION A-A



LOOP LOCATION BARRIER SLOT DETAIL



BARRIER STABILIZATION DETAIL

NOTES:

1. SEE STD DWG BA 1B FOR ADDITIONAL REINFORCEMENT STEEL REQUIREMENTS.
2. USE A 4" WHITE PVC SLEEVE TO FORM THE LIFTING HOLES. LEAVE SLEEVE IN PLACE AFTER CASTING.
3. INDICATE ON PLAN SET WHEN BARRIER SECTIONS WITH SCUPPERS ARE REQUIRED.
4. PROVIDE BLOCK OUT AND REINFORCING STEEL FOR SCUPPERS WHEN NOTED ON PLANS.
5. PLACE AN ADEQUATE AMOUNT OF SILICONE ADHESIVE ON BOTTOM OF WASHER BEFORE INSERTING PIN TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.

NO.	DATE	APPR.	REMARKS
1	02/23/06	B.A.	CORRECTED NOTE 1 DRAWING CALLOUT.

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

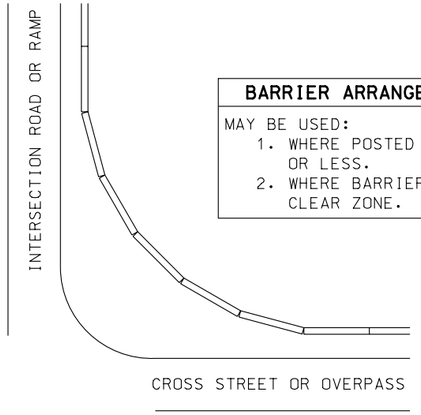
RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23.2006 DATE
DEPUTY DIRECTOR

PRECAST CONCRETE
FULL BARRIER
STANDARD SECTION

STANDARD DRAWING TITLE

STD DWG
BA 1A

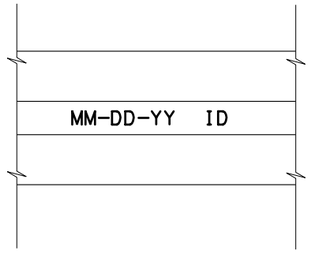
DGN File: L:\Standard_Drawings\Imperial\2005\Approved\ChangesToApproved\ba01A.dgn
01-MAR-2006



BARRIER ARRANGED ON A CURVE

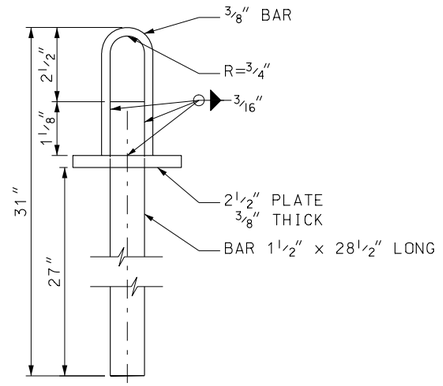
MAY BE USED:
1. WHERE POSTED SPEED IS 35 MPH OR LESS.
2. WHERE BARRIER IS OUTSIDE THE CLEAR ZONE.

CURVED LAYOUT



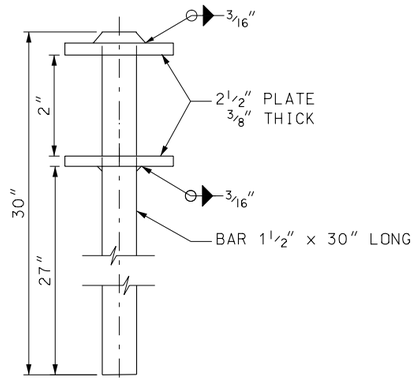
BARRIER MARKINGS

SEE NOTE 1



GALVANIZED CONNECTING PIN

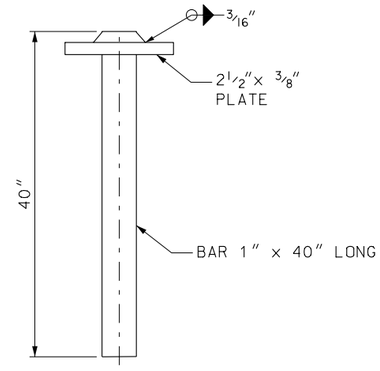
OPTION 1



GALVANIZED CONNECTING PIN

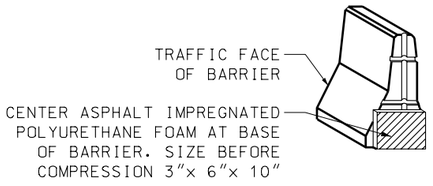
OPTION 2

SEE NOTE 5



STABILIZATION PIN

SEE NOTE 5



BARRIER SEAL

SEE NOTE 3

METAL REINFORCEMENT TABLE

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE SCUPPERS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	2 BARS CENTERED OVER EACH LIFTING HOLE	#4	(4)	3 3/8"R, 2'-5", 90°, LIFTING HOLE
S-2	HORIZ. AROUND SLOTS BETWEEN V-I SCUPPERS	#4	(2)	(4)1 1/2"R, SLOTS, 7", 12" OVERLAP, 1'-6", 1"MIN CLEAR, 1"MIN TO BAR
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH SCUPPER	#5	(16)	TOTAL LENGTH 4'-9", 2 3/16"R, 4 3/8", 12°, 9 1/2", 2'-1 3/8"

NOTES:

1. MARK EACH BARRIER WITH 1 1/2" NUMBERS INDICATING THE DATE OF CASTING AND IDENTIFICATION NUMBER SUPPLIED BY THE INSPECTOR, IMPRESSED 1/4" DEEP INTO THE TOP CENTER OF THE BARRIER.
2. USE COATED REINFORCING STEEL EXCEPT AS NOTED.
3. DO NOT USE BARRIER SEAL WHEN SCUPPERS ARE PRESENT ON BARRIER.
4. PLACE AN ADEQUATE AMOUNT OF SILICONE ADHESIVE ON BOTTOM OF WASHER BEFORE INSERTING PIN TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.
5. USE OF A HOT FORGED HEAD, MEETING PLATE SIZE AND THICKNESS IS ACCEPTABLE IN PLACE OF A WELDED PLATE.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	08/25/05	G.S.	ADDED NOTE 5. CORRECTED CONNECTION PIN OPTION 1 DIMENSIONS. CHANGED WELDING INFORMATION ON PIN DETAIL.

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — AUG.25,2005 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED — AUG.25,2005 DATE

DEPUTY DIRECTOR

PRECAST CONCRETE FULL BARRIER STANDARD SECTION

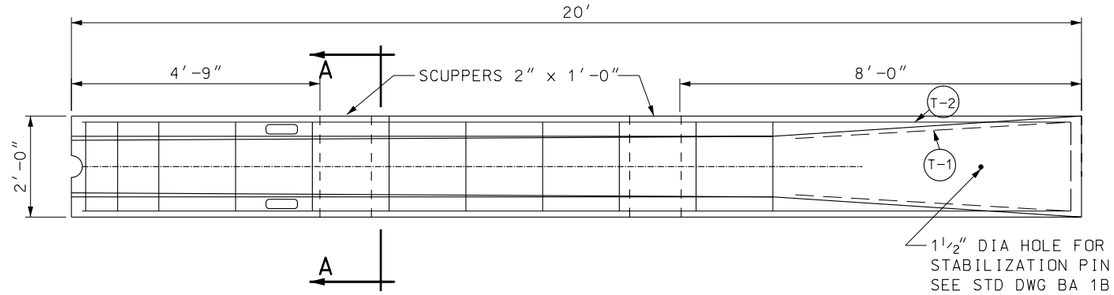
STANDARD DRAWING TITLE

STD DWG

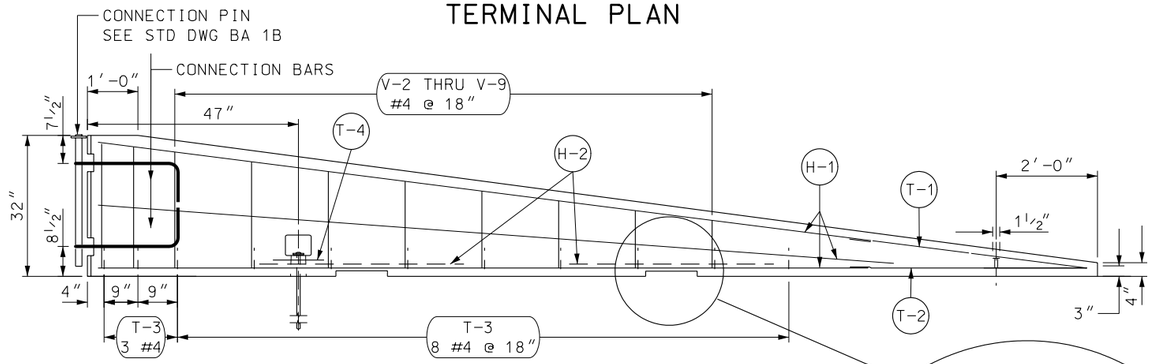
BA 1B

DGN File: L:\Standard_Drawings\Imperial\2005Approved\Change4Approved\BA01B.dgn

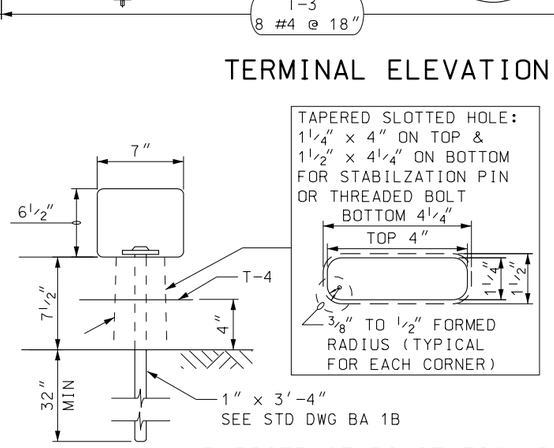
06-SEP-2005



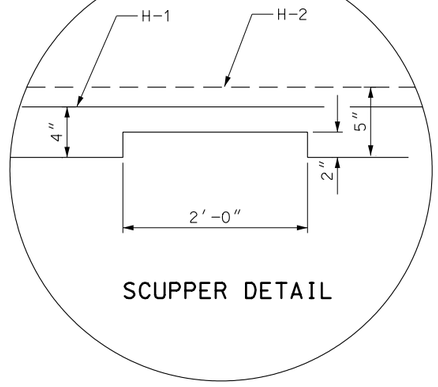
TERMINAL PLAN



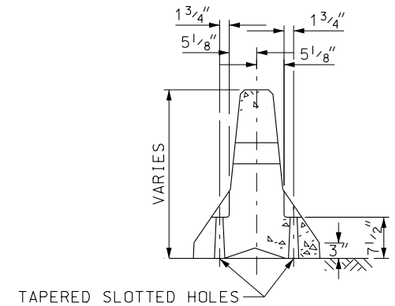
TERMINAL ELEVATION



BARRIER STABILIZATION DETAIL

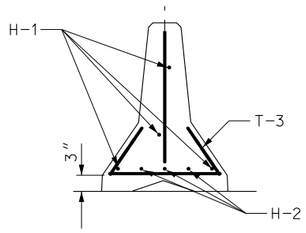


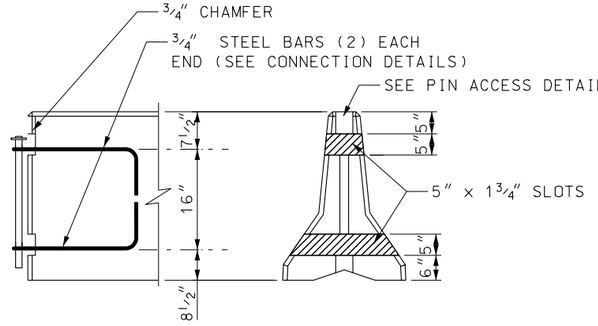
SCUPPER DETAIL



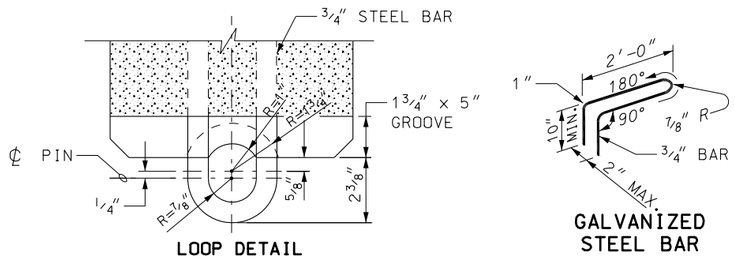
TAPERED SLOTTED HOLES FOR STABILIZATION PINS (SEE BARRIER STABILIZATION DETAIL)

SECTION A-A



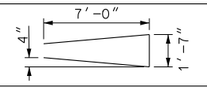
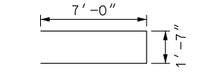
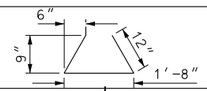
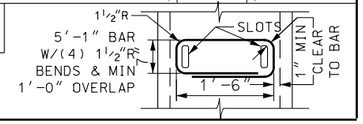


BARRIER SLOT DETAIL



CONNECTION DETAILS

REINFORCING STEEL FOR TERMINAL

MARK	LOCATION	SIZE NO.	NO. BARS	LENGTH	SKETCH
T-1	HORIZONTAL TOP AT SLOPE END OF BARRIER	5	1	15′-7″	
T-2	HORIZONTAL BOTTOM AT SLOPED END OF BARRIER	5	1	15′-7″	
T-3	VERTICAL THROUGH BARRIER	4	10	3′-8″	
T-4	HORIZONTAL AT STABILIZATION PIN SLOT	4	1		

MARK	LOCATION	SIZE NO.	NO. BARS	LENGTH
H-1	HORIZONTAL IN BARRIER TIED TO V BARS	4	4	15′-0″
H-2	CENTERED ABOVE SCUPPER LONG.& TRAVERSELY	4	6	4′-0″
V-1	VERTICAL IN BARRIER	4	2	2′-4″
V-2	VERTICAL IN BARRIER	4	1	2′-2″
V-3	VERTICAL IN BARRIER	4	1	2′-0″
V-4	VERTICAL IN BARRIER	4	1	1′-10″
V-5	VERTICAL IN BARRIER	4	1	1′-8″
V-6	VERTICAL IN BARRIER	4	1	1′-6″
V-7	VERTICAL IN BARRIER	4	1	1′-4″
V-8	VERTICAL IN BARRIER	4	1	1′-2″
V-9	VERTICAL IN BARRIER	4	1	1′-0″

NOTES:

1. USE TERMINAL SECTION AS ALLOWED ON STD DWG BA 1D AND BA 1E.
2. USE IN WORK ZONES PERMITTED WHEN SPEEDS ARE ≤40 MPH PRIOR TO CONSTRUCTION.
3. WHEN USED IN A BURIED IN BACKSLOPE APPLICATION TERMINAL SECTION DOES NOT NEED TO BE PLACE ON PAVED SURFACE.
4. USE CONNECTION PIN AND STABILIZATION PINS AS PER STD DWG BA 1B. PIN TERMINAL SECTION AND STANDARD SECTION TOGETHER AT CONNECTION LOOPS. INSTALL STABILIZATION PINS IN ALL APPLICATIONS.
5. PRE-DRILL A 1 INCH HOLE THROUGH THE PAVED SURFACE PRIOR TO INSTALLING THE STABILIZATION PINS.
6. DO NOT PLACE BARRIER ON TOP OF ANY CURBING.
7. DO NOT OVERLAY ANY MATERIAL PAST THE FIRST BREAK POINT ON THE BARRIER. THE FIRST BREAK POINT IS 3 INCHES FROM THE BOTTOM OF THE BARRIER.
8. PLACE AN ADEQUATE AMOUNT OF SILICON ADHESIVE ON THE BOTTOM WASHER OF THE CONNECTION PIN BEFORE INSERTING, TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.
9. USE COATED REINFORCING STEEL EXCEPT AS NOTED.

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

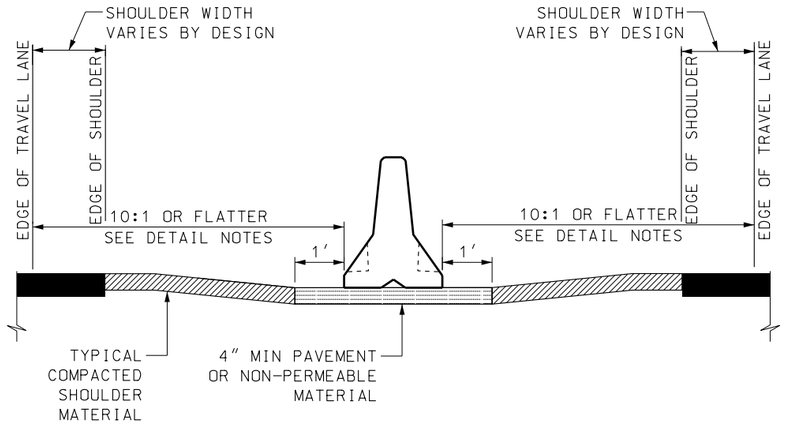
RECOMMENDED FOR APPROVAL — JAN.01,2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — JAN.01,2005 DATE
DEPUTY DIRECTOR

PRECAST CONCRETE BARRIER TERMINAL FOR SPEED ≤ 40 MPH

STANDARD DRAWING TITLE

STD DWG
BA 1C

DGN File: N:\Eas\Standard Drawings\Imperial\2005Approved\Barriers (BA)\ba01c.dgn
15-DEC-2004

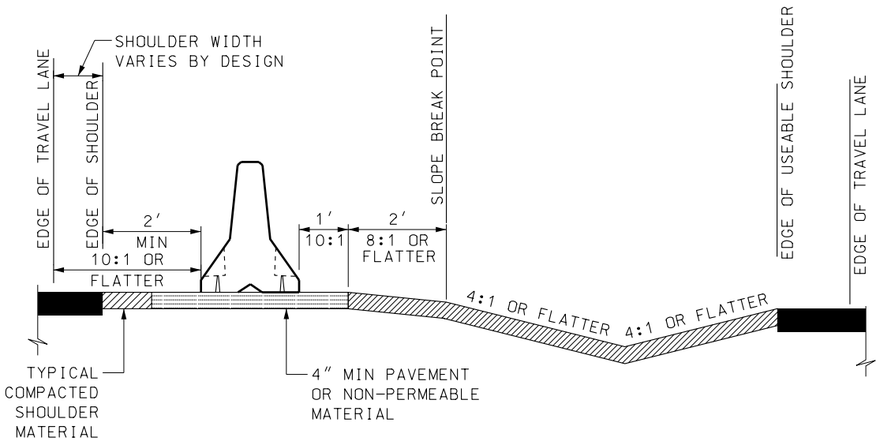


MEDIAN INSTALLATION

USE THIS DETAIL WHEN MEDIAN BARRIER IS WARRANTED

1. NO STABILIZATION PINS ARE REQUIRED WHEN BARRIER FACE IS GREATER THAN 12 FEET FROM TRAVEL LANE.

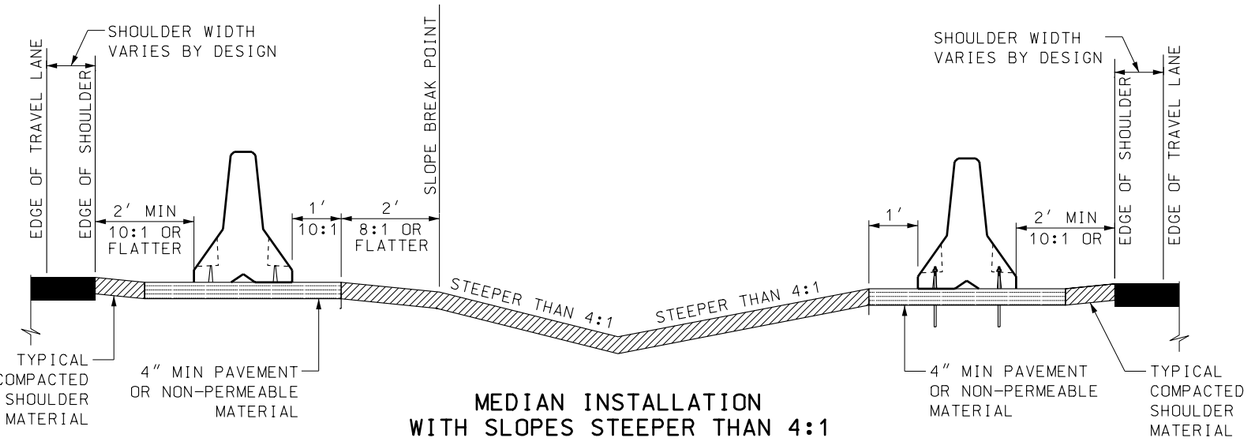
2. INSTALL STABILIZATION PINS WHEN BARRIER FACE IS 12 FEET OR LESS FROM TRAVEL LANE.



MEDIAN INSTALLATION W/ OFFSET ROADWAY

USE THIS DETAIL WHEN MEDIAN BARRIER IS WARRANTED

1. IF THE 10:1/8:1 SLOPE 3 FEET BEHIND THE BARRIERS CANNOT BE MAINTAINED STABILIZATION PINS ARE REQUIRED.



MEDIAN INSTALLATION
WITH SLOPES STEEPER THAN 4:1

USE THIS DETAIL WHEN MEDIAN BARRIER IS WARRANTED

1. IF THE 10:1/8:1 SLOPE 3 FEET BEHIND THE BARRIERS CANNOT BE MAINTAINED STABILIZATION PINS ARE REQUIRED.

NOTES:

1. USE APPROPRIATE FLARE RATE AS SUGGESTED IN THE ROADSIDE DESIGN GUIDE, CURRENT EDITION, FOR RIGID BARRIER SYSTEMS, WHEN BARRIER IS PLACED WITH A FLARE.

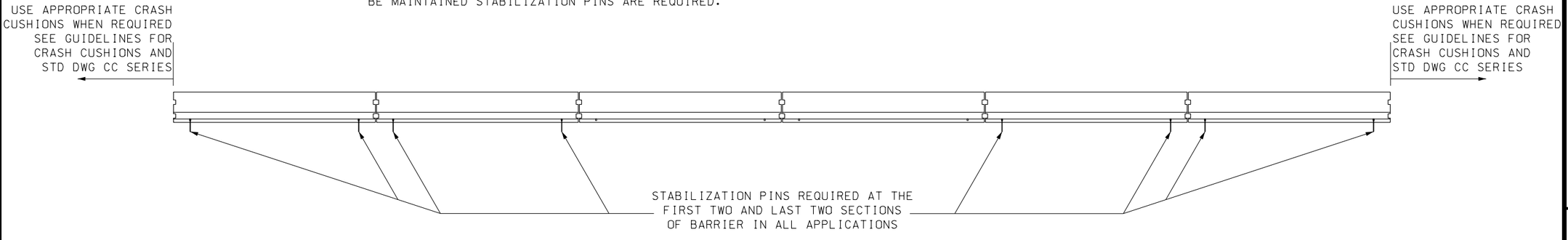
2. PLACE BARRIER ON A 4" PAVED OR NON PERMEABLE SURFACE.

3. DO NOT PLACE BARRIER ON TOP OF ANY CURBING.

4. PIN ALL BARRIER SECTIONS TOGETHER AT CONNECTION LOOPS.

5. PRE-DRILL A 1" THROUGH THE PAVED SURFACE PRIOR TO INSTALLING THE STABILIZATION PIN.

6. PLACE AN ADEQUATE AMOUNT OF SILICON ADHESIVE ON THE BOTTOM WASHER OF THE CONNECTION PIN BEFORE INSERTING, TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.



REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

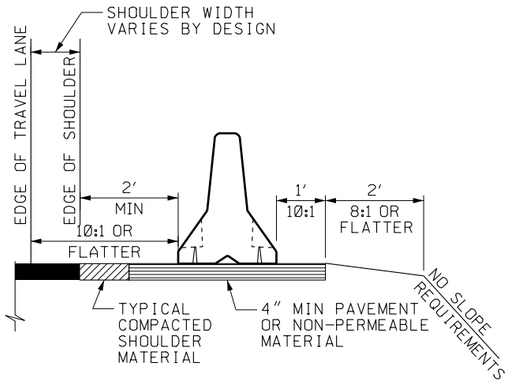
RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

PRECAST CONCRETE FULL SECTION MEDIAN INSTALLATION

STANDARD DRAWING TITLE

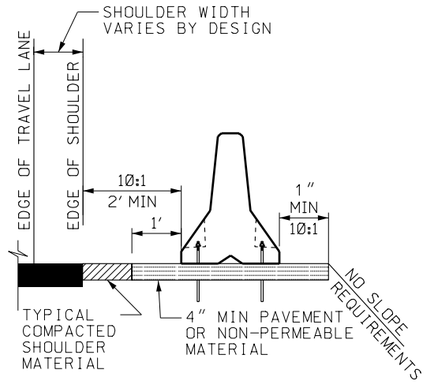
STD DWG
BA 1D

DGN File:N:\Esat\Standard Drawings\Imperial\2005Approved\Barriers (BA)\ba01d.dgn
15-DEC-2004



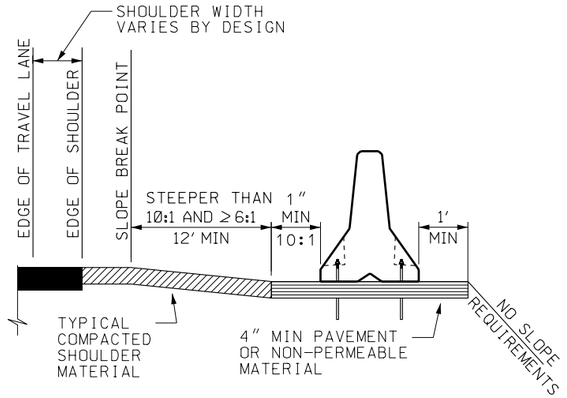
SHOULDER INSTALLATION OPTION 1

NO STABILIZATION PINS REQUIRED



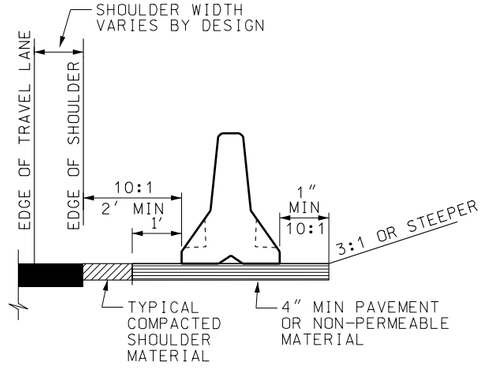
SHOULDER INSTALLATION OPTION 2

STABILIZATION PINS REQUIRED



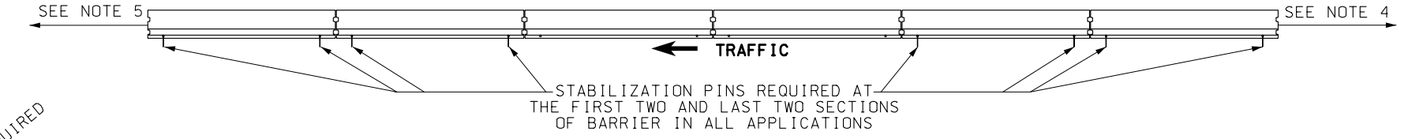
SHOULDER INSTALLATION OPTION 3

STABILIZATION PINS REQUIRED



SHOULDER INSTALLATION WITH 3:1 OR STEEPER BACKSLOPE

NO STABILIZATION PINS REQUIRED



FORMULAS FOR LENGTH OF NEED CALCULATIONS BURIED IN TERMINAL SECTION ONLY

BACKSLOPE STEEPER THAN 3:1

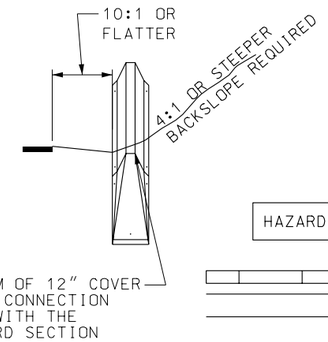
LON= FLR x D1

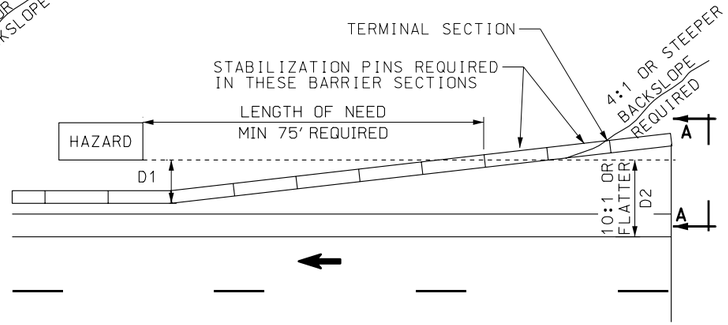
BACKSLOPE 3:1 TO A MINIMUM 4:1

≥ 50 MPH "LON"= 450 – (15 x D2)
≤ 45 MPH "LON"= 250 – (15 x D2)

LON: LENGTH OF NEED
FLR: BARRIER FLARE RATE
D1: DISTANCE FROM FACE OF BARRIER TO FACE OF HAZARD OR DITCH BOTTOM
D2: DISTANCE FROM EDGE OF TRAVEL LANE TO FACE OF HAZARD OR DITCH BOTTOM

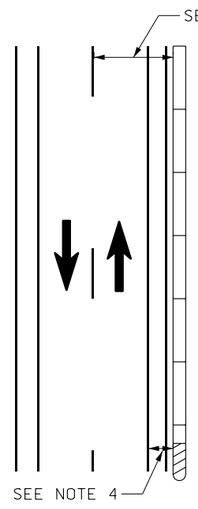
SECTION A–A



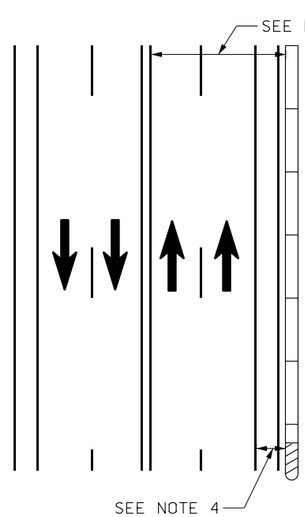


NOTES:

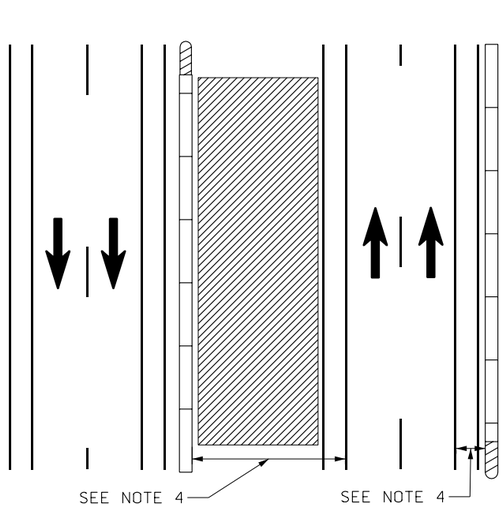
1. USE REQUIRED CLEAR ZONE FROM THE ROADSIDE DESIGN GUIDE, CURRENT EDITION. USE APPROPRIATE FLARE RATE AS SUGGESTED IN ROADSIDE GUIDE, CURRENT EDITION, FOR RIGID BARRIER SYSTEMS, WHEN BARRIER IS PLACED WITH A FLARE.
2. PLACE BARRIER ON A 4″ PAVED OR NON-PERMEABLE SURFACE.
3. PIN ALL BARRIER SECTIONS TOGETHER AT CONNECTION LOOPS.
4. INSTALL APPROPRIATE CRASH CUSHION WHEN BARRIER END IS WITHIN 1.2 TIMES REQUIRED AASHTO CLEAR ZONE AND THE DESIGN SPEED IS GREATER THAN 40 MPH. TERMINAL SECTION (STD DWG BA 1C) USE PERMITTED FOR APPROACH TRAFFIC WHEN THE DESIGN SPEED FOR ROADWAY IS 40 MPH OR LESS. INSTALL TERMINAL SECTION (STD DWG BA 1C) WHEN THE APPROACH BARRIER END IS OUTSIDE 1.2 TIMES THE REQUIRED AASHTO CLEAR ZONE.
5. INSTALL APPROPRIATE CRASH CUSHION ON TRAILING END OF BARRIER WHEN BARRIER END IS WITHIN REQUIRED AASHTO CLEAR ZONE, AND THE DESIGN SPEED IS GREATER THAN 40 MPH. INSTALL TERMINAL SECTION (STD DWG BA 1C) WHEN BARRIER END IS OUTSIDE THE MINIMUM REQUIRED CLEAR ZONE BUT WITHIN 1.2 TIMES MAXIMUM THE REQUIRED AASHTO CLEAR ZONE.
6. THE CONCRETE BARRIER DESIGN ALLOWS FOR A 3′ OUTWARD LATERAL MOVEMENT IF THE BARRIER IS STRUCK. STABILIZATION PINS ARE NOT REQUIRED WHEN USED ON A SHOULDER APPLICATION AND THE REQUIRED SLOPE OF 8:1 OR FLATTER EXIST 3′ BEHIND THE BARRIER. USE STABILIZATION PINS WHEN THE SLOPES ARE STEEPER THAN 8:1 AND WITHIN 3′ OF THE BARRIER BACKSIDE.
7. PRE-DRILL A 1″ HOLE THROUGH THE PAVED SURFACE PRIOR TO INSTALLING THE STABILIZATION PIN.
8. DO NOT PLACE BARRIER ON TOP OF ANY CURBING.
9. DO NOT OVERLAY ANY MATERIAL PAST THE FIRST BREAK POINT ON THE BARRIER. THE FIRST BREAK POINT IS 3″ FROM THE BOTTOM OF THE BARRIER.
10. PLACE AN ADEQUATE AMOUNT OF SILICON ADHESIVE ON THE BOTTOM WASHER OF THE CONNECTION PIN BEFORE INSERTING, TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.



TWO LANE/TWO WAY



MULTI–LANE ARTERIAL



MULTI–LANE ARTERIAL WITH TRAVERSABLE MEDIAN

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

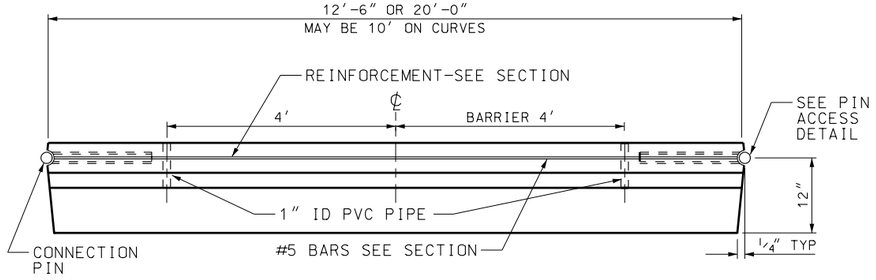
RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

PRECAST CONCRETE FULL SECTION SHOULDER APPLICATIONS

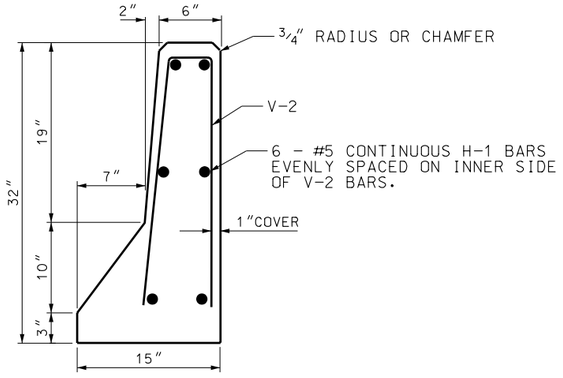
STANDARD DRAWING TITLE

STD DWG
BA 1E

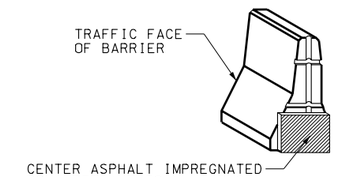
DGN File: N:\Eng\Standard Drawings\Imperial\2005Approved\Barriers (BA)\ba81e.dgn
15-DEC-2004



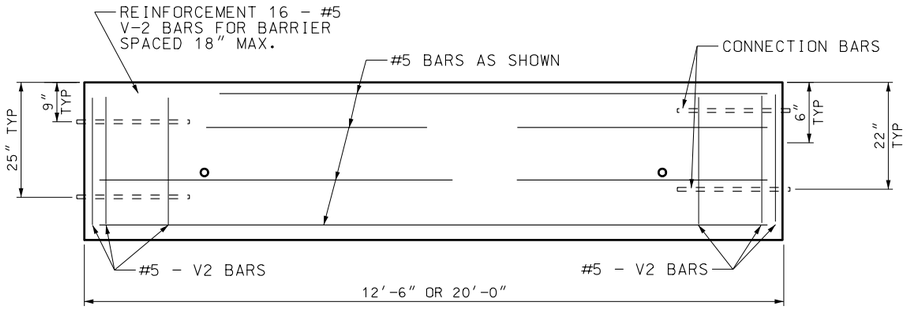
PLAN ELEVATION



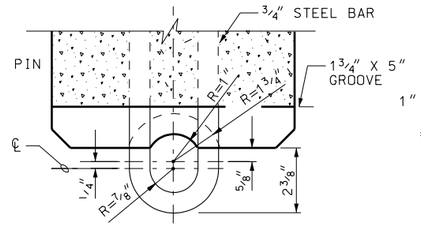
END ELEVATION



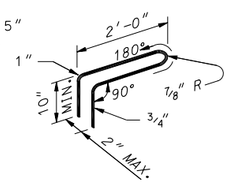
BARRIER SEAL



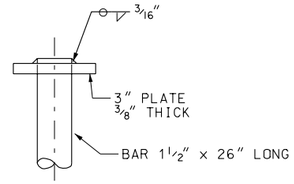
FRONT ELEVATION



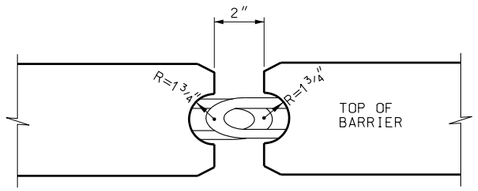
LOOP DETAIL



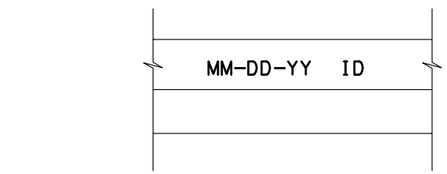
GALVANIZED STEEL BAR



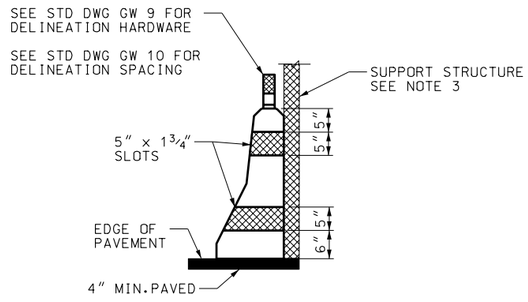
GALVANIZED CONNECTING PIN



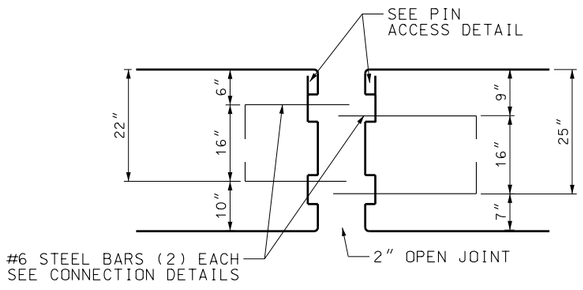
PIN ACCESS DETAIL



BARRIER MARKINGS
SEE NOTE 6



BARRIER SLOT DETAIL



LOOP LOCATION ELEVATION

CONNECTION DETAILS

METAL REINFORCEMENT TABLE				
MARK	LOCATION	BAR SIZE	NO. BARS	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	6	19′-3″
V-2	VERTICAL IN BARRIER (3) EACH END	#5	16	TOTAL LENGTH 4′-9″; 2 3/8″R; 4 3/8″; 8″; 6°; 2′-1 3/8″

NOTES:

1. USE 3/4″ RADIUS ON CHAMFER ON EXPOSED CONCRETE CORNER.
2. PLACE AN ADEQUATE AMOUNT OF SILICONE ADHESIVE ON BOTTOM OF WASHER BEFORE INSERTING PIN TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.
3. PLACE PRECAST HALF BARRIER WHERE THERE IS A SUPPORT STRUCTURE BEHIND EACH SECTION (IE:SOUND WALL,MSE WALL)
4. DO NOT USE PRECAST HALF BARRIER AS AN ALTERNATE, OR IN CONJUNCTION WITH PRECAST CONCRETE FULL BARRIER SECTION IN A WORK ZONE.
5. USE COATED REINFORCING STEEL EXCEPT AS NOTED.
6. MARK EACH BARRIER WITH 2″ NUMBERS INDICATE THE DATE OF CASTING AND IDENTIFICATION NUMBER SUPPLIED BY THE INSPECTOR, IMPRESSED 1/4″ DEEP INTO THE TOP CENTER OF THE BARRIER.

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

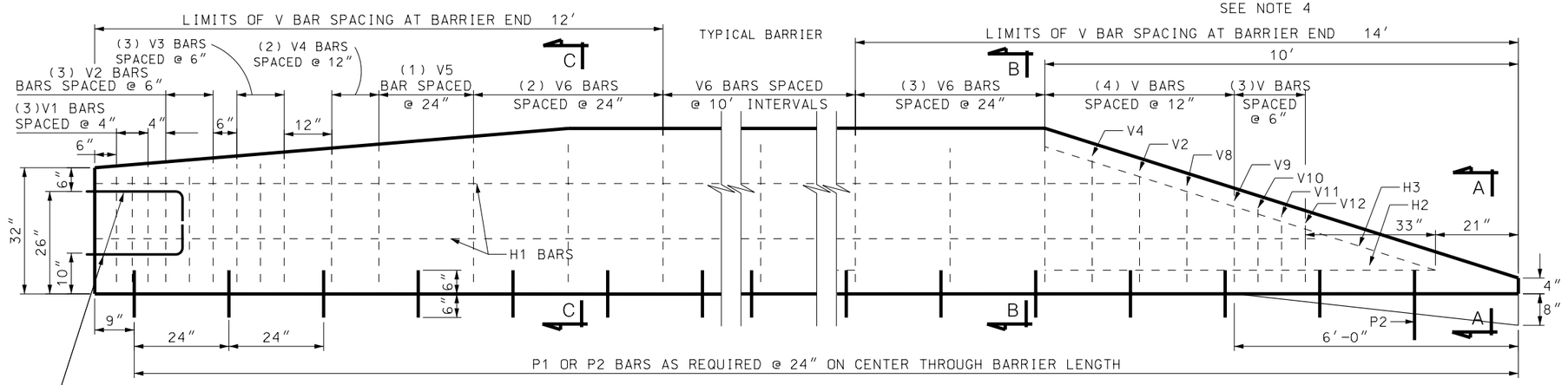
PRECAST CONCRETE HALF BARRIER STANDARD SECTION

STANDARD DRAWING TITLE

STD DWG
BA 2

DGN File:N:\East\Standard Drawings\Imperial\2005Approved\Barriers (BA)\ba02.dgn
15-DEC-2004

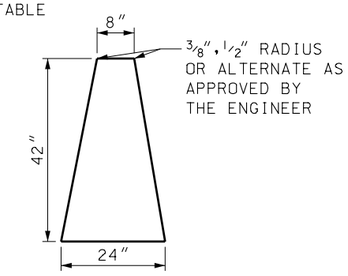
APPROACH END (A)
SEE NOTE 4



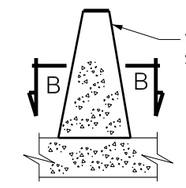
INSTALL CONNECTION LOOPS PER STD DWG BA 1A CONNECTION DETAILS. USE CONNECTION PIN AS PER STD DWG BA 1B

SLOPED TRAILING END (B) OPTION 1
SEE NOTE 4

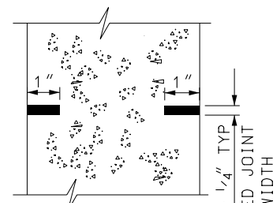
ELEVATION
SEE STD DWG BA 3A2 FOR CROSS SECTIONS AND REINFORCING STEEL TABLE



TYPICAL SECTION

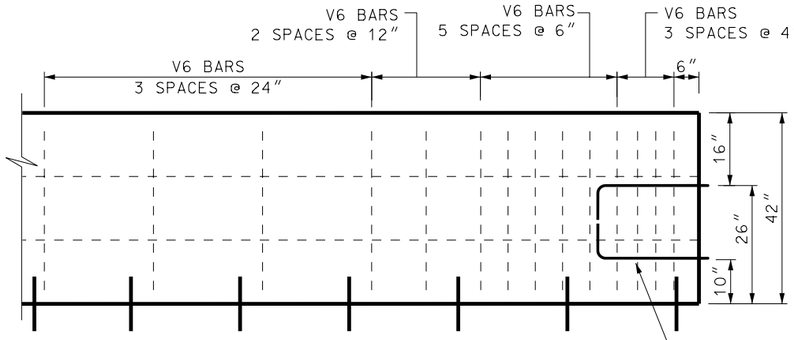


SECTION THROUGH SAWED JOINT
SEE NOTE 5



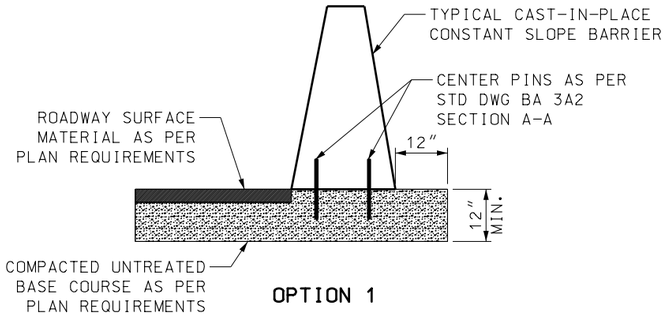
SECTION B-B
SEE NOTE 5

TRAILING END (C) OPTION 2
SEE NOTES 4 & 6

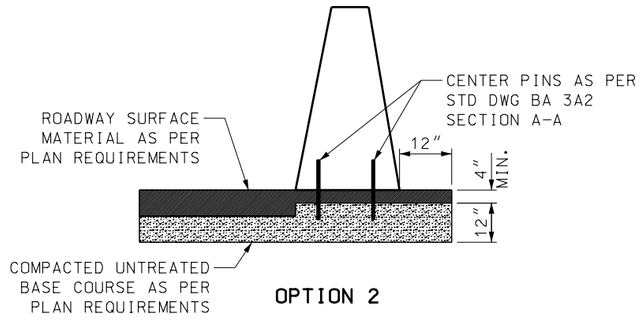


INSTALL X CONNECTION AS PER STD DWG BA 3C WHEN TRANSITIONING TO PRECAST CONSTANT SLOPE BARRIER

SUB-BASE REQUIREMENTS



OPTION 1



OPTION 2

NOTES:

1. THE ENGINEER APPROVES CONTRACTOR DEVISED METHOD OF POSITIONING THE LONGITUDINAL REINFORCING STEEL +/- 1/2" AS DIMENSIONED.
2. DO NOT USE TO SUPPORT HIGHWAY LIGHTING POLES. ADDITIONAL SUPPORT DETAILS REQUIRED.
3. DO NOT USE BARRIER FOR BRIDGE APPLICATIONS.
4. CHOOSE APPROPRIATE END TREATMENT:
   A. CONSTRUCT APPROACH END AS PER DETAIL APPROACH END (A) WHEN CRASH CUSHION INSTALLATION IS REQUIRED.
   B. CONSTRUCT TRAILING END AS PER DETAIL APPROACH END (A) WHEN CRASH CUSHION INSTALLATION IS REQUIRED.
   C. CONSTRUCT SLOPED TRAILING END (B) WHEN BARRIER END DOES NOT REQUIRE A CRASH CUSHION, IS OUTSIDE THE MINIMUM REQUIRED CLEAR ZONE, BUT IS WITHIN 1.2 TIMES THE MINIMUM REQUIRED CLEAR ZONE OF APPROACH TRAFFIC.
   D. USE OF SLOPED END PERMITTED FOR APPROACH TRAFFIC WHEN DESIGN SPEED IS 40 MPH OR LESS.
   E. FULL HEIGHT BARRIER, TRAILING END OPTION (C), IS ACCEPTABLE WHEN THE END IS OUTSIDE THE 1.2 TIMES MINIMUM REQUIRED CLEAR ZONE OF APPROACH TRAFFIC.
5. SAW CONTRACTION JOINTS AT PAVEMENT TRANSVERSE JOINTS. WHEN INSTALLED WITH ASPHALT PAVEMENT SAW CONTRACTION JOINTS AT 15 FOOT INTERVALS. ADJUST REBAR AT JOINT TO MAINTAIN MINIMUM 2 INCH OFFSET BETWEEN REBAR AND JOINT.
6. V6 BARS PER TRAILING END OPTION 2 AT BOTH SIDES OF CONSTRUCTION JOINT.
7. USE COATED REINFORCEMENT STEEL.
8. USE CLASS AA(AE) CONCRETE.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	11/30/06	G.S.	NEW DRAWING. SPLIT BA 3 INTO 2 DRAWINGS, ADDED SUBBASE REQUIREMENTS, X CONNECTION NOTE OPTION C. BA 3 DELETED.

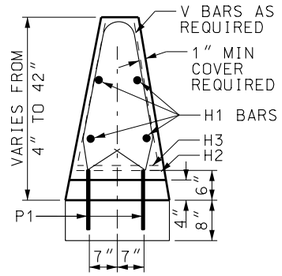
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — NOV. 30, 2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — NOV. 30, 2006 DATE
DEPUTY DIRECTOR

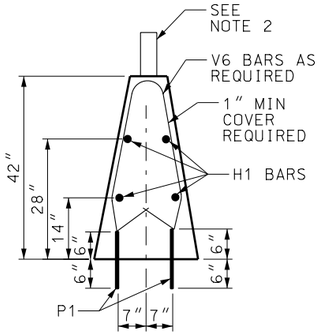
CAST IN PLACE CONSTANT SLOPE BARRIER
STANDARD DRAWING TITLE

STD DWG
BA 3A1

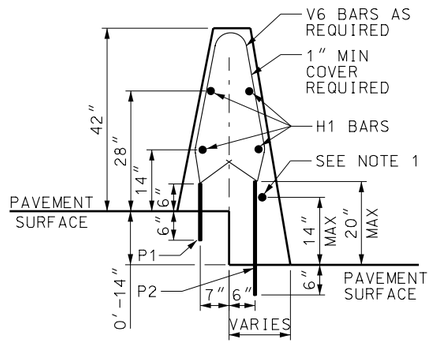
DGN File: L:\Standard Drawings\Imperial\2005Approved\ChangeBApproved\BA03A1.dgn
18-DEC-2006



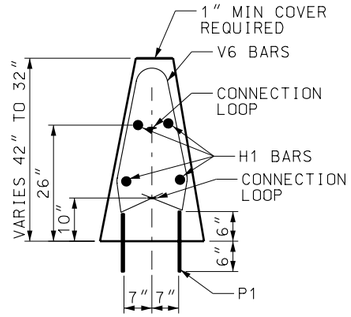
SECTION A–A



SECTION B–B



SECTION B–B
STEPPED PAVEMENT



SECTION C–C

REINFORCING STEEL TABLE

MARK	BAR SIZE	(NO.) OF BARS				SKETCH
H1	#5	4 OR 5 RUN THROUGH LENGTH OF BARRIER REQUIRED SPLICE LENGTH – 45"				
H2	#5	TRAILING END SECTION (B) BOTTOM SIDE				8'-3" 1'-7"
H3	#5	TRAILING END SECTION (B) TOP SIDE				8'-3" 6" 1'-7"
END OPTION		(A)	(B)	(C)	D	
V1	#5	3			28"	
V2	#5	3	1		29"	
V3	#5	3			30"	
V4	#5	2	1		32"	
V5	#5	1			34"	
* V6	#5	2	3	14	36"	
V7	#5		1		25"	
V8	#5		1		22"	
V9	#5		1		20"	
V10	#5		1		18"	
V11	#5		1		16"	
P1	#8	BARRIER TO PAVEMENT				12" LONG PINS @ 24" CENTERS
P2	#8	BARRIER TO PAVEMENT STEPPED PAVEMENT				26" LONG PINS @ 24" CENTERS

2¼"R
D
7"
15"
9¼"

*V6 BARS SHOWN IN CHART ARE THE NUMBER OF BARS REQUIRED FOR EACH END OPTION.
SPACE V6 BARS AT 10' INTERVALS THROUGH TYPICAL BARRIER SECTION.

NOTE:

1. ATTACH ADDITIONAL H1 BAR TO P2 BAR WHEN STEPPED PAVEMENT CONFIGURATION REQUIRED.
2. SEE STD DWG GW 9 FOR DELINEATION HARDWARE AND STD DWG GW 10 FOR DELINEATION SPACING.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	11/30/06	G.S.	NEW DRAWING. SPLIT DETAILS FROM BA 3A.

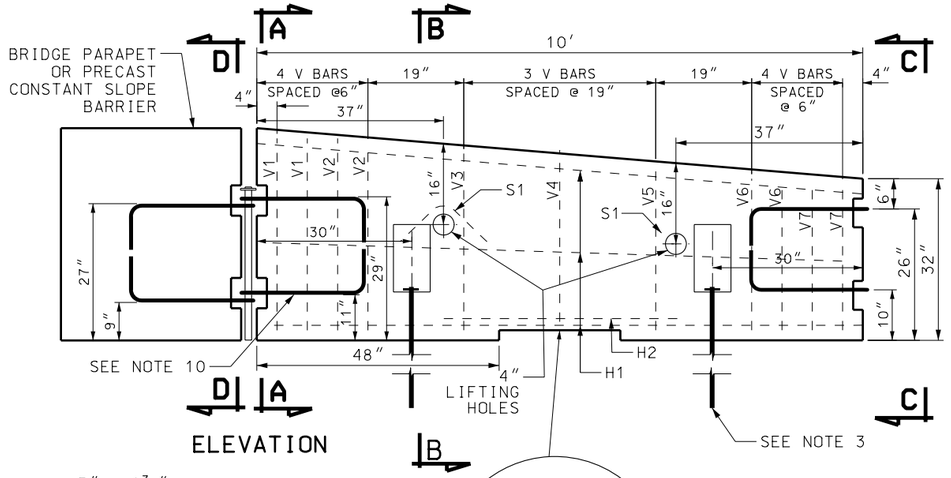
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — NOV. 30, 2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — NOV. 30, 2006 DATE
DEPUTY DIRECTOR

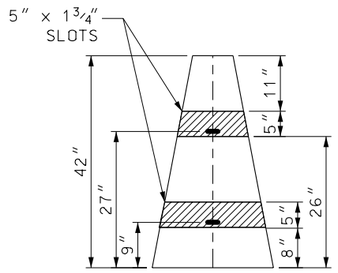
CAST IN PLACE CONSTANT SLOPE BARRIER

STANDARD DRAWING TITLE

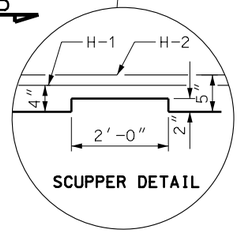
STD DWG
BA 3A2



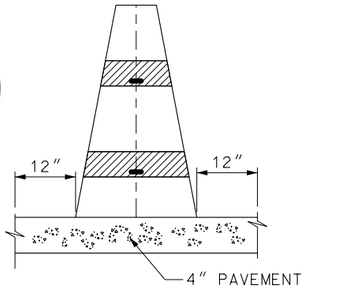
ELEVATION

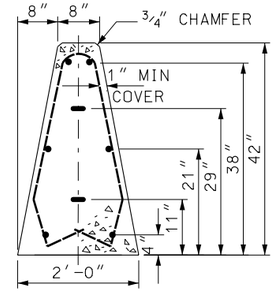


SECTION D-D

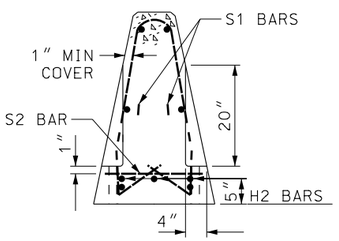


SCUPPER DETAIL

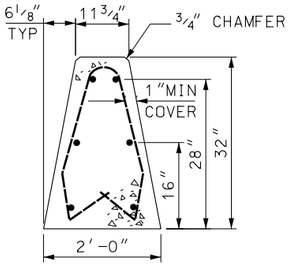




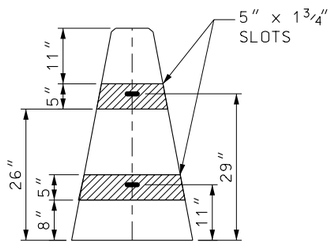
SECTION A-A



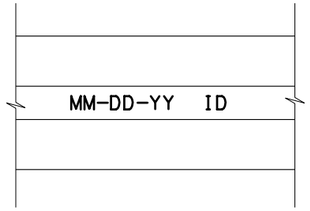
SECTION B-B



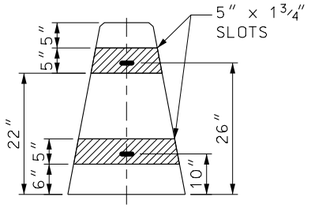
SECTION C-C



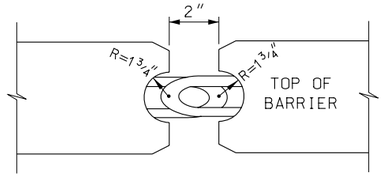
SLOT DETAIL
SECTION A-A



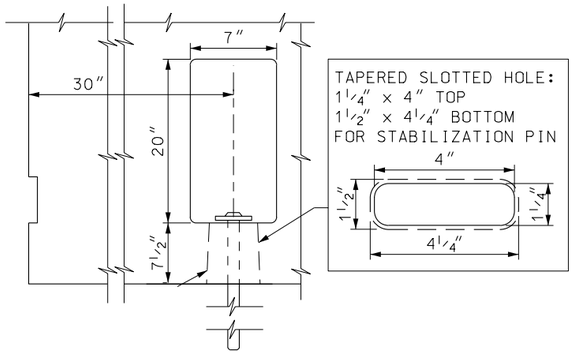
BARRIER MARKINGS
SEE NOTE 6



SLOT DETAIL
SECTION C-C



PIN ACCESS DETAIL

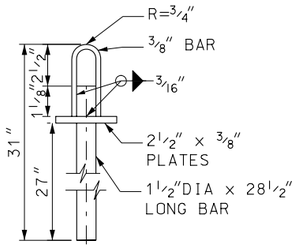


BARRIER STABILIZATION SLOT DETAIL

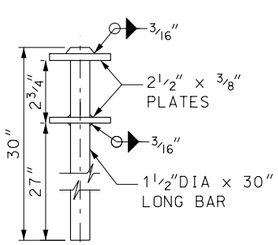
STEEL REINFORCEMENT TABLE

MARK	BAR SIZE	NO. OF BARS	SKETCH
H1	#5	(6) RUN THROUGH LENGTH OF BARRIER	9′-1″
H2	#5	(3) BARS CENTERED OVER SCUPPER	4′-4″
S1	#4	(2) 2 BARS CENTERED OVER EACH LIFTING HOLE	3⅜″R, 2′-5″, 1″ COVER, 90°
S2	#4	(2) BARS CENTERED 1″ BELOW TOP OF STABILIZATION PIN SLOTS	1½″R, SLOTS, 7″, 1′-6″, 1″MIN CLEAR TO BAR

		#		D	
V1	#5	2	(11) BARS PLACED AS PER ELEVATION DETAIL	38″	2¼″R, D, 7″, 15″, 9¼″
V2	#5	2		37″	
V3	#5	1		35″	
V4	#5	1		34″	
V5	#5	1		33″	
V6	#5	2		30″	
V7	#5	2		29″	

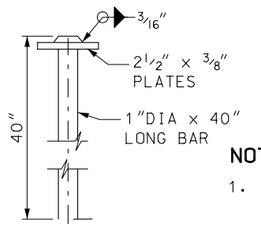


OPTION 1

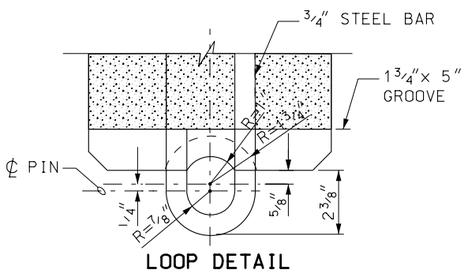


OPTION 2

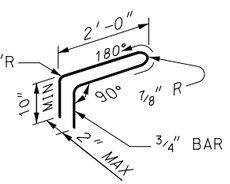
GALVANIZED CONNECTION PIN
SEE NOTE 9



GALVANIZED STABILIZATION PIN
SEE NOTE 9



LOOP DETAIL



GALVANIZED STEEL BAR

CONNECTION DETAILS

NOTES:

1. TRANSITION SECTION REQUIRED WHEN A CRASH CUSHION OR W-BEAM GUARDRAIL TRANSITION IS REQUIRED ON A CONSTANT SLOPE BRIDGE PARAPET.
2. PROVIDE 4″ OF PAVEMENT OR NON-PERMEABLE MATERIAL 1′ IN FRONT OF AND 1′ ON BOTH SIDES OF TRANSITION SECTION. PLACE TRANSITION SECTION ON TOP OF FINAL PAVEMENT COURSE.
3. ALL APPLICATIONS REQUIRE THE INSTALLATION OF STABILIZATION PINS AND CONNECTION PINS. PRE DRILL 1″ HOLE THROUGH PAVEMENT SURFACE PRIOR TO INSTALLING STABILIZATION PINS.
4. USE A 4″ WHITE PVC SLEEVE TO FORM THE LIFTING HOLES. LEAVE SLEEVE IN PLACE AFTER CASTING.
5. PLACE AN ADEQUATE AMOUNT OF SILICONE ADHESIVE ON BOTTOM OF WASHER BEFORE INSERTING PIN TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.
6. MARK EACH TRANSITION SECTION WITH 1½″ NUMBERS INDICATING THE DATE OF CASTING AND IDENTIFICATION NUMBER SUPPLIED BY THE INSPECTOR, IMPRESSED¼″ DEEP INTO THE TOP CENTER OF THE BARRIER.
7. USE COATED REINFORCEMENT STEEL.
8. USE CLASS AA(AE) CONCRETE.
9. USE OF A HOT FORGED HEAD, MEETING PLATE SIZE AND THICKNESS IS ACCEPTABLE IN PLACE OF A WELDED PLATE.
10. INSTALL TYPE X JOINT CONNECTION AS PER STD DWG BA 3C WHEN ATTACHING TRANSITION SECTION TO PRE-CAST CONSTANT SLOPE BARRIER.

REVISIONS			
NO.	DATE	APPR.	REMARKS
1	02/24/05	G.S.	NEW DRAWING.
2	08-25-06	G.S.	ADDED NOTE 9. CORRECTED CONNECTION PIN OPTION 1 DIMENSIONS. CHANGED WELDING INFORMATION ON PIN DETAIL.
3	11/30/06	G.S.	ADDED NOTE 10.

UTAH DEPARTMENT OF TRANSPORTATION
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SALT LAKE CITY, UTAH

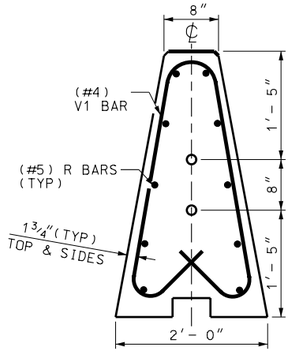
RECOMMENDED FOR APPROVAL — NOV. 30, 2006 — DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — NOV. 30, 2006 — DATE
DEPUTY DIRECTOR

PRECAST CONCRETE CONSTANT SLOPE TRANSITION SECTION FOR CRASH CUSHION AND W-BEAM GUARDRAIL

STANDARD DRAWING TITLE

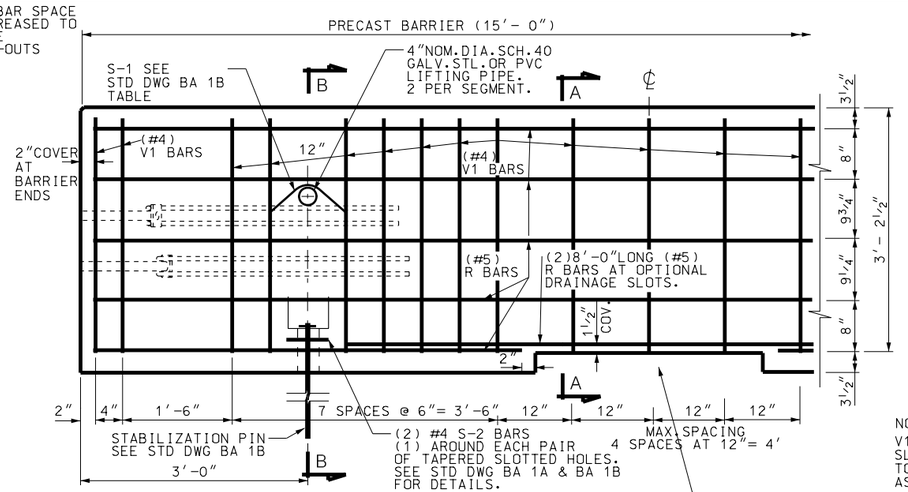
STD DWG
BA 3B

DGN File: L:\Standard Drawings\Imperial\2005Approved\vChange89approved\BA93B.dgn
18-DEC-2006



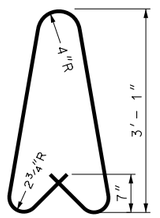
PRECAST BARRIER END SECTION

PIPE LOCATIONS FOR JOINT TYPE X CONNECTION



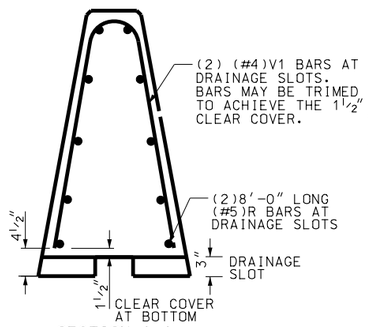
REINFORCEMENT FOR PRECAST CONSTANT SLOPE CONCRETE BARRIER (CSCB) (TYPE 1)

SHOWING REINFORCEMENT FOR JOINT CONNECTION ON (TYPE X)



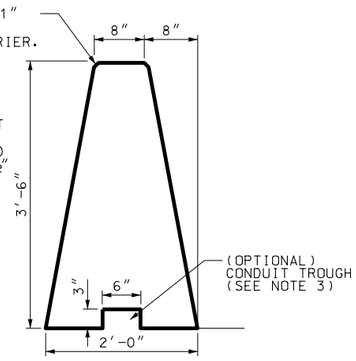
V1 BAR
#4 REBAR

NOTE:
V1 BARS ABOVE THE DRAINAGE SLOT MAY NEED A MODIFICATION TO ACCOMMODATE 1½″ CLEAR COVER AS DIRECTED BY THE ENGINEER.



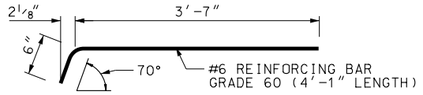
SECTION A-A

STEEL PLACEMENT AT (REQUIRED) DRAINAGE SLOT



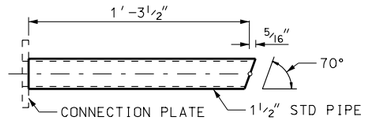
CONSTANT SLOPE CONCRETE TRAFFIC BARRIER

THE TYPE X JOINT CONNECTION MAY BE USED IN CAST IN PLACE BARRIER WHEN ADJACENT TO PRECAST CSCB TO MATCH THE JOINT CONNECTION.



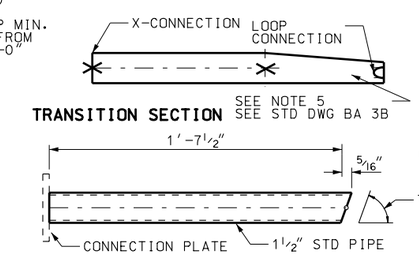
DEFORMED BAR ANCHOR DETAILS

(2) BARS REQUIRED PER ASSEMBLY.
(8) REQUIRED PER JOINT.



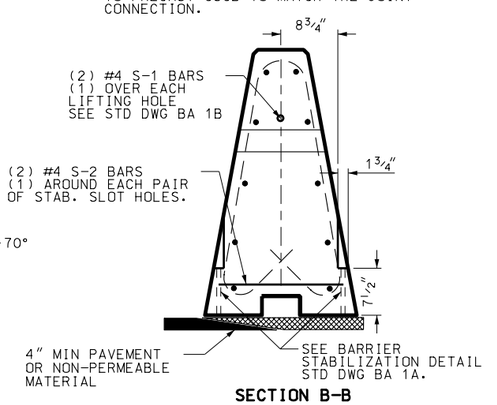
UPPER CONNECTION PIPE DETAILS

(1) STEEL PIPE REQUIRED PER UPPER ASSEMBLY.
(2) REQUIRED PER JOINT.

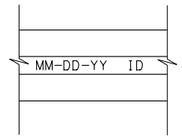


LOWER CONNECTION PIPE DETAILS

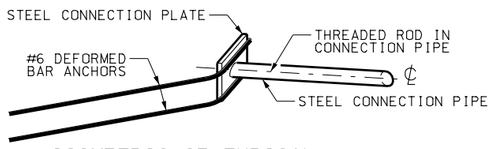
(1) STEEL PIPE REQUIRED PER LOWER ASSEMBLY.
(2) REQUIRED PER JOINT.



SECTION B-B

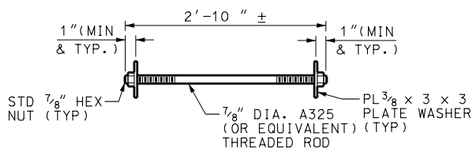


BARRIER MARKINGS
SEE NOTE 7



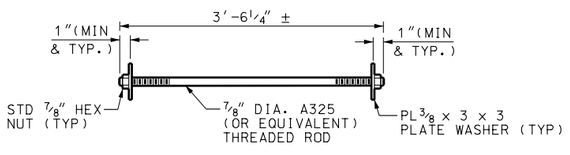
ISOMETRIC OF TYPICAL WELDED ASSEMBLY

(4) (2 UPPER & 2 LOWER) ASSEMBLIES REQUIRED PER JOINT.



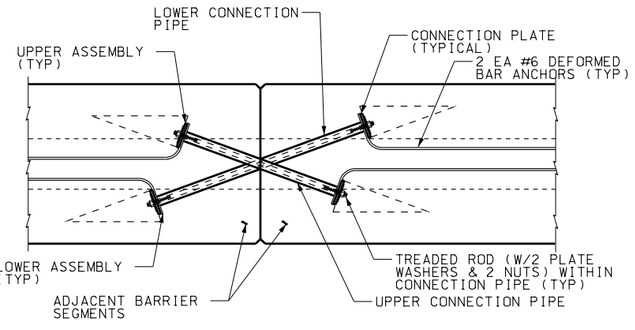
UPPER CONNECTION THREADED ROD DETAILS

(1) UPPER THREADED ROD (W/2 PL⅜ x 3 x 3 PLATE WASHERS & 2 STD HEX NUTS) REQUIRED PER JOINT.



LOWER CONNECTION THREADED ROD DETAILS

(1) LOWER THREADED ROD (W/2 PL⅜ x 3 x 3 PLATE WASHERS & 2 STD HEX NUTS) REQUIRED PER JOINT.



TYPE X JOINT INSTALLATION DETAIL

BARRIER REINFORCING AND TYPE X JOINT BLOCK-OUT DIMENSIONS NOT SHOWN FOR CLARITY.

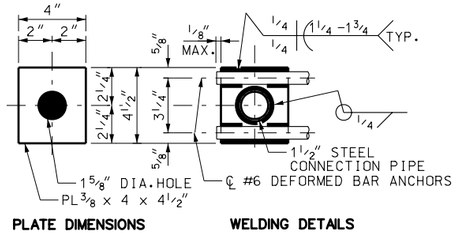
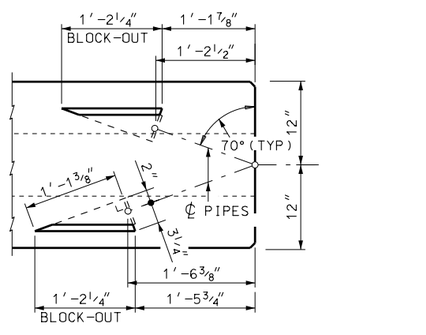


PLATE DIMENSIONS **WELDING DETAILS**

CONNECTION PLATE DETAILS

(1) PLATE REQUIRED PER ASSEMBLY.
(4) REQUIRED PER JOINT.
GALVANIZE ALL STEEL FITTINGS FOR JOINT TYPE AFTER FABRICATION.



BARRIER PLAN AT JOINT (TYP.)

NOTES:

1. USE CLASS AA(AE) CONCRETE.
2. USE COATED REINFORCING STEEL.
3. CONDUIT TROUGH MAY BE OMITTED, AS SHOWN ELSEWHERE OR AS DIRECTED BY THE ENGINEER.
4. GALVANIZE ALL STEEL COMPONENTS AFTER FABRICATION EXCEPT REINFORCING STEEL UNLESS NOTED OTHERWISE.
5. IN THE TRANSITION FROM PRECAST CSCB TO CRASH CUSHION OR W-BEAM GUARD RAIL INSTALL CONSTANT SLOPE TRANSITION SECTION AS PER STD DWG BA 3B.
6. WHEN MATCHING INTO EXISTING CAST IN PLACE BARRIER. STD DWG BA 3B USE LOOP CONNECTION ON CAST IN PLACE END AND X-CONNECTION ON THE OTHER END.
7. MARK EACH BARRIER WITH 1½″ NUMBERS INDICATING THE DATE OF CASTING AND IDENTIFICATION NUMBER SUPPLIED BY THE INSPECTOR. IMPRESSED¼″ DEEP INTO THE TOP CENTER OF THE BARRIER.
8. FOR BARRIER SEAL DETAILS SEE STD DWG BA 1B.

WEIGHT OF PRECAST CONSTANT SLOPE CONCRETE BARRIER 717 lbs/ft

REVISIONS				
NO.	DATE	APPR.	REMARKS	
1	11/30/06	SA	NEW DRAWING.	

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

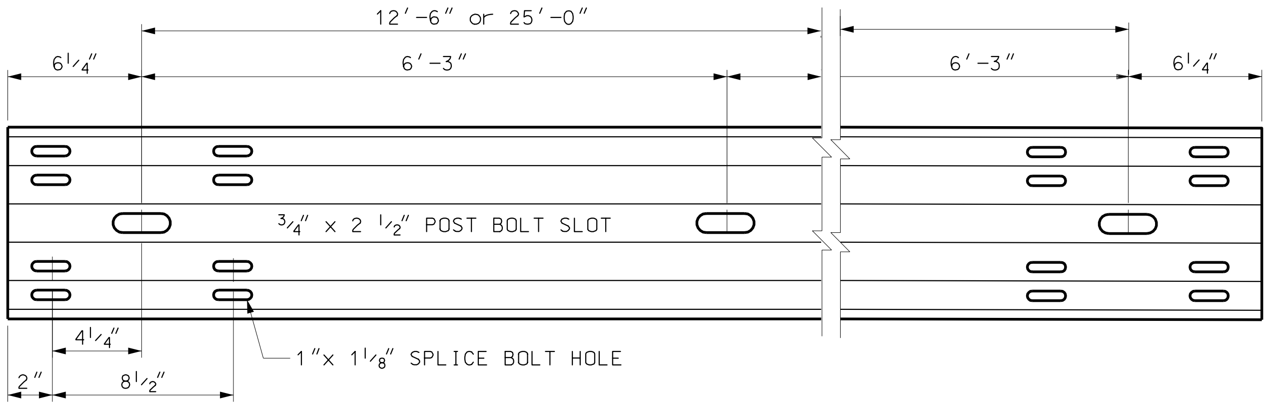
RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — NOV.30.2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — NOV.30.2006 DATE

PRECAST CONSTANT SLOPE CONCRETE BARRIER
(TYPE X JOINT CONNECTION)

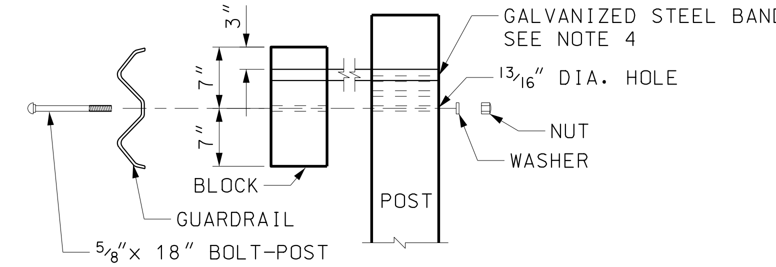
STANDARD DRAWING TITLE

STD DWG
BA 3C

DGN File:L:\Standard Drawings\Imperial\2005Approved\xChange8Approved\BA03C.dgn
18-DEC-2006

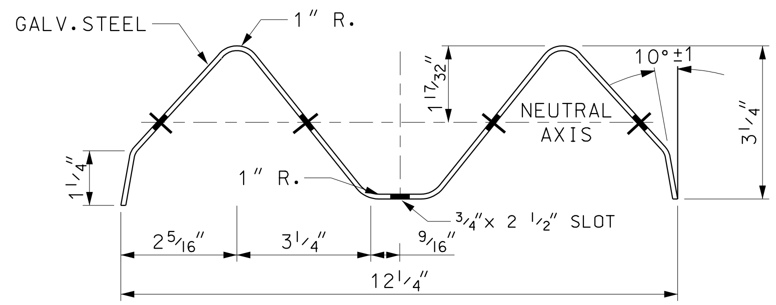


STANDARD GUARDRAIL PANELS

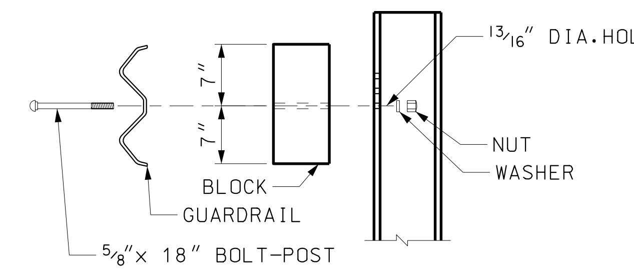


WOOD POST TO RAIL TYPICAL

USE BOTTOM HOLE FOR INITIAL INSTALLATION

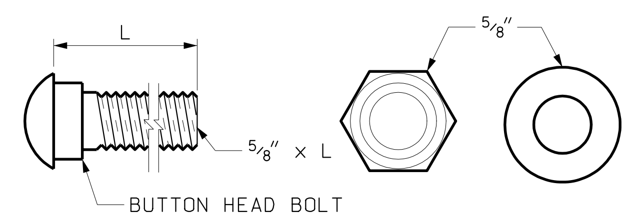


SECTION THRU RAIL ELEMENT



STEEL POST TO RAIL TYPICAL

USE BOTTOM HOLE FOR INITIAL INSTALLATION

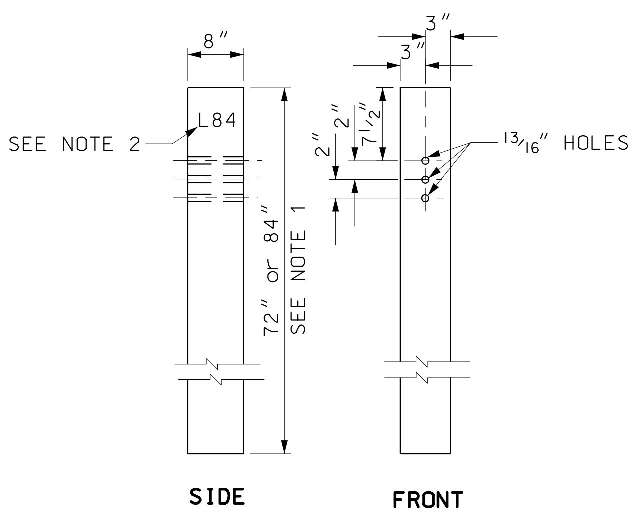


GALVANIZED BOLTS, NUTS, WASHERS

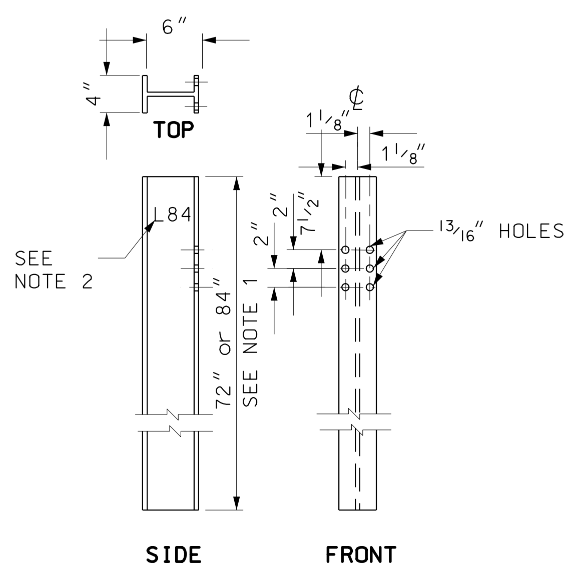
	L
SPLICE BOLTS (WASHER NOT REQ'D.)	1¼″
STEEL BOLT W/ WOOD BLOCK	10″
WOOD POST W/ WOOD BLOCK	18″
WOOD POST W/ WOOD BLOCK (MEDIAN)	25″

NOTES:

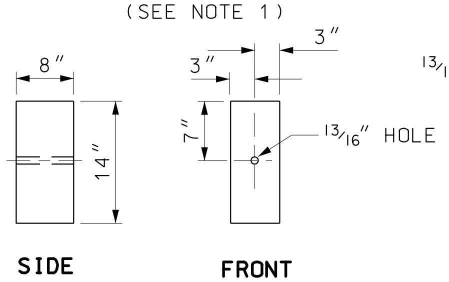
1. SEE INSTALLATION DETAIL STD DWG BA 4E FOR POST LENGTH REQUIREMENTS.
2. 84″ POST MARKING: WOOD POST, BRAND POST WITH 1½″ x 2″ MARKING L84, STEEL POST STAMP POST WITH 1½″ x 2″ MARKING L84.
3. DO NOT USE WASHERS ON RAIL FACE OR SPLICE CONNECTION.
4. BAND WOOD BLOCKS TO WOOD POSTS WITH ½″ STEEL GALVANIZED BAND.
5. A COMPOSITE OR PLASTIC BLOCK CAN BE SUBSTITUTED FOR THE NOTCHED WOOD BLOCK ON STEEL POST INSTALLATION. NCHRP-350 COMPLIANCE REQUIRED.



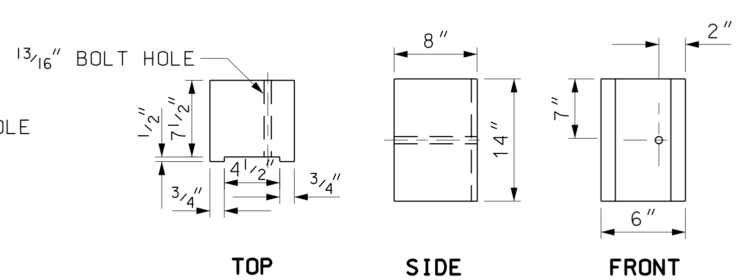
6″ X 8″
WOOD POST
(SEE NOTE 1)



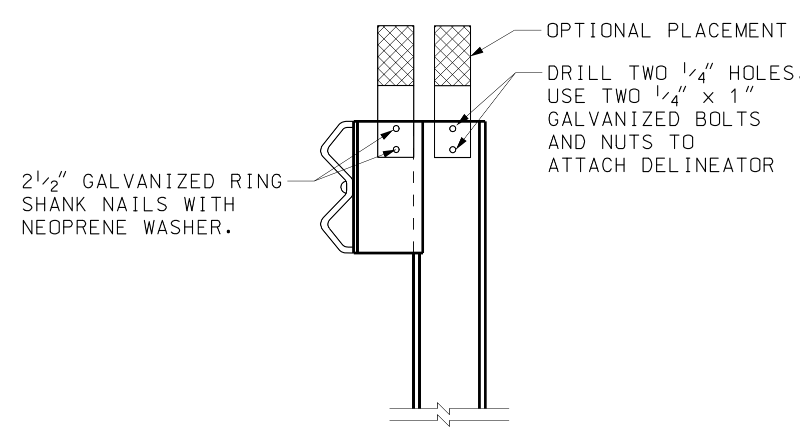
W6 X 8.5
STEEL POST



6″ X 8″
WOOD BLOCK

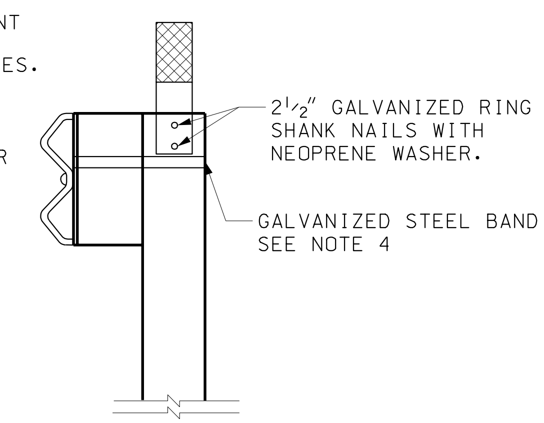


6″ X 8″
NOTCHED WOOD BLOCK
(SEE NOTE 3)



DELINEATOR DETAIL
STEEL POST W/WOOD
OR COMPOSITE BLOCK

SEE STD DWG GW 9 FOR HARDWARE
AND GW 10 FOR PLACEMENT



DELINEATOR DETAIL
WOOD POST W/WOOD BLOCK

SEE STD DWG GW 9 FOR HARDWARE
AND GW 10 FOR PLACEMENT

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

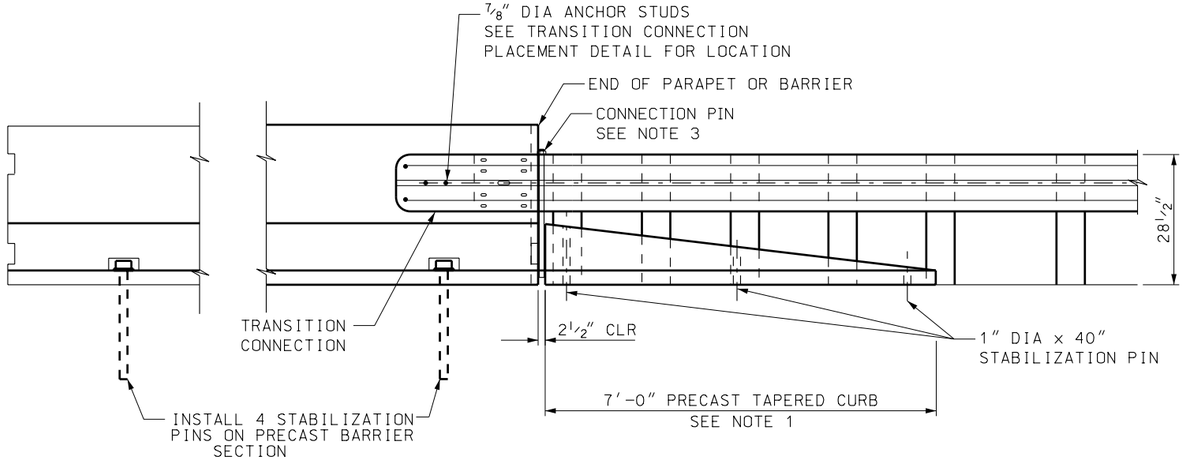
RECOMMENDED FOR APPROVAL — JAN.01,2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — JAN.01,2005 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL HARDWARE

STANDARD DRAWING TITLE

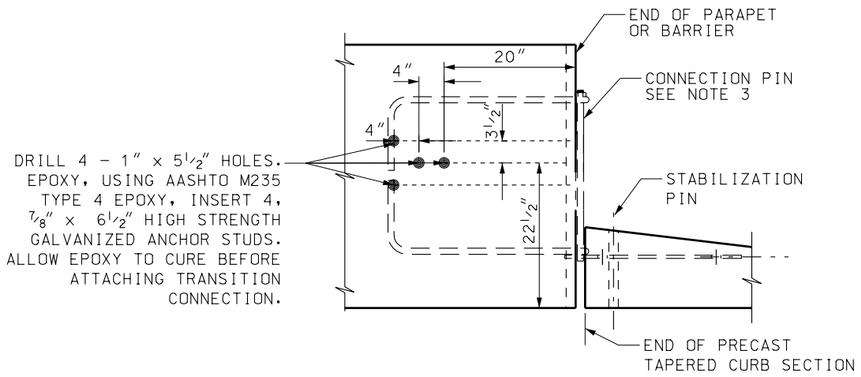
STD DWG
BA 4A

DGN File: N:\Esd\Standard_Drawings\Imperial\2005Approved\Barriers (BA)\ba04A.dgn
15-DEC-2004

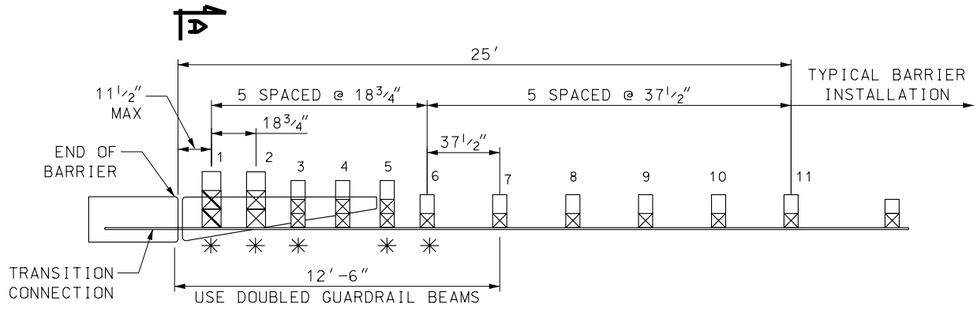


ELEVATION

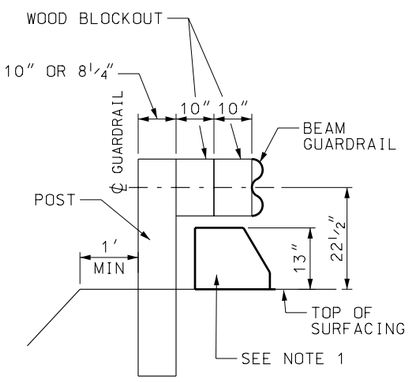
RIGHT SIDE SHOWN LEFT SIDE SIMILAR



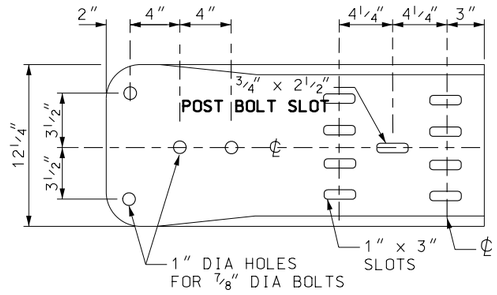
TRANSITION CONNECTION AND CURB SECTION PLACEMENT DETAIL



POST PLACEMENT DETAIL



SECTION A-A



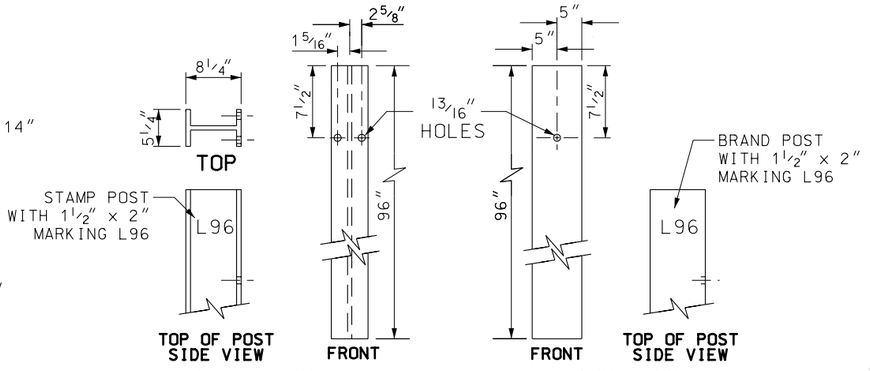
TRANSITION CONNECTION

WOOD POST OPTION
POST # 1 & # 2
- POSTS 10" x 10" x 8'
- BLOCKS 10" x 10" x 14"

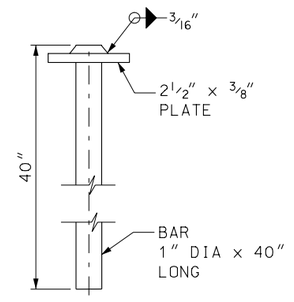
POSTS # 3 THROUGH # 11
- TYPICAL WOOD POSTS AND BLOCKS (SEE STD DWG BA 4A)

STEEL POST OPTION
POSTS # 1 & # 2
- W8 x 21 x 8'
- BLOCKS 6" x 8" x 14"

POSTS # 3 THROUGH # 11
- TYPICAL STEEL POSTS AND BLOCKS (SEE STD DWG BA 4A)



POSTS # 1 AND # 2 OPTIONS



STABILIZATION PIN

SEE NOTE 5

NOTES:

1. SEE PLAN SET FOR BARRIER OR PARAPET TYPE TO DETERMINE APPROPRIATE CURB SECTION. SEE STD DWG BA 4C FOR CURB SECTION REQUIREMENTS.
2. COMPLETE SITE PREPARATION PRIOR TO INSTALLING TRANSITION.
3. INSTALL A CONNECTION PIN USING A CONNECTION PIN FROM STD DWG BA 1B.
4. PRE-DRILL 1" HOLE THROUGH PAVED SURFACE PRIOR TO INSTALLING STABILIZATION PINS.
5. USE OF A HOT FORGED HEAD, MEETING PLATE SIZE AND THICKNESS IS ACCEPTABLE IN PLACE OF A WELDED PLATE.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/24/05	G.S.	TITLE CHANGED. DRAWING COMPLETELY REVISED.
2	08/25/05	G.S.	ADDED NOTE 5. CHANGED WELDING INFORMATION ON PIN DETAIL.
3	11/30/06	G.S.	REVISED BLOCK REQUIREMENT. SEE POST PLACEMENT DETAIL.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — NOV. 30, 2006 — DEPUTY DIRECTOR
CHAIRMAN STANDARDS COMMITTEE APPROVED — NOV. 30, 2006 — DATE

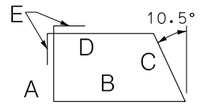
W-BEAM GUARDRAIL TRANSITION

STANDARD DRAWING TITLE

STD DWG
BA 4B

DGN File:L:\Standard_Drawings\Imperial\2005Approved\vChange8Approved\BA04B.dgn
18-DEC-2006

REINFORCING STEEL SCHEDULE



TYPE I

(FOR 1 SECTION ONLY)

BENT BARS

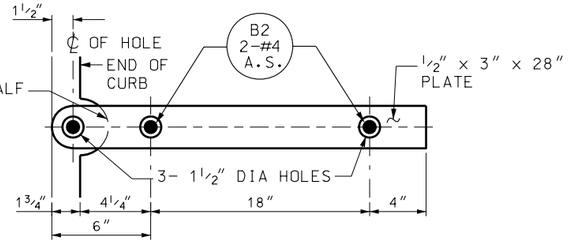
(ALL DIMENSIONS ARE OUT TO OUT)

MARK	SIZE	NO.	TYPE	LENGTH	A	B	C	D	E
C1	#3	1	1	4′-1″	9½″	12½″	10″	10″	3½″
C2	↑	↑	↑	3′-8″	7½″	11½″	9″	9″	↑
C3				3′-0″	6½″	10½″	8″	8″	
C4				2′-11″	5½″	9″	5½″	7½″	
C5				2′-6½″	4½″	8″	4½″	6½″	
C6	↓	↓	↓	2′-3½″	3½″	7″	3½″	5½″	3½″
C7	#3	1	1	1′-11½″	3″	6″	3½″	5″	3″

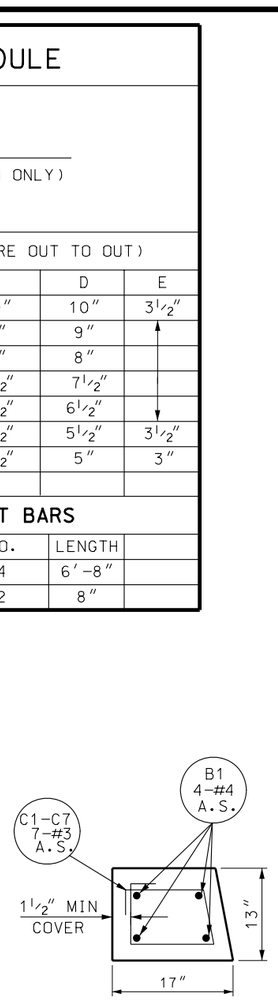
NOTE:
ALL REINFORCING BARS TO HAVE
1½″ MINIMUM COVER.

STRAIGHT BARS

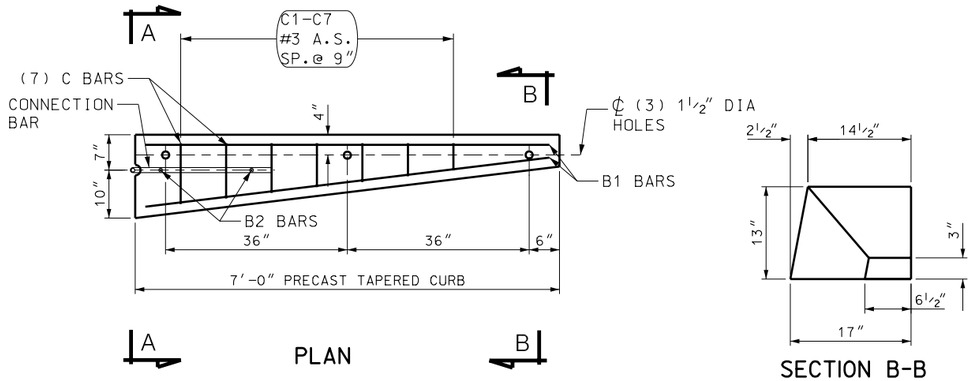
MARK	SIZE	NO.	LENGTH	
B1	#4	4	6′-8″	
B2	#4	2	8″	



CONNECTION BAR



SECTION A-A

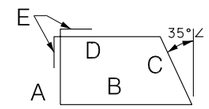


PLAN

SECTION B-B

CONSTANT SLOPE CURB SECTION

REINFORCING STEEL SCHEDULE



TYPE I

(FOR 1 SECTION ONLY)

BENT BARS

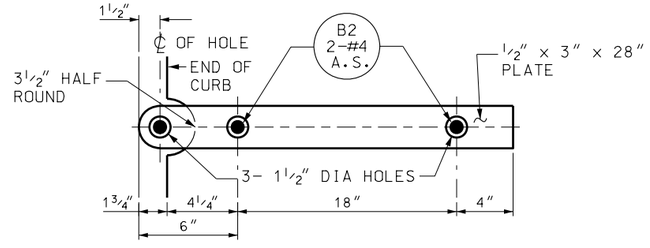
(ALL DIMENSIONS ARE OUT TO OUT)

MARK	SIZE	NO.	TYPE	LENGTH	A	B	C	D	E
C1	#3	1	1	4′-2½″	9″	14½″	11″	9″	3½″
C2	↑	↑	↑	3′-10½″	8″	13½″	10″	8″	↑
C3				3′-6½″	7″	12½″	9″	8″	
C4				3′-2″	6″	11″	8″	7″	
C5				2′-10″	5½″	10″	6½″	6″	
C6	↓	↓	↓	2′-6″	4½″	8½″	5½″	5″	↓
C7	#3	1	1	2′-2½″	4½″	8″	5″	5″	3½″

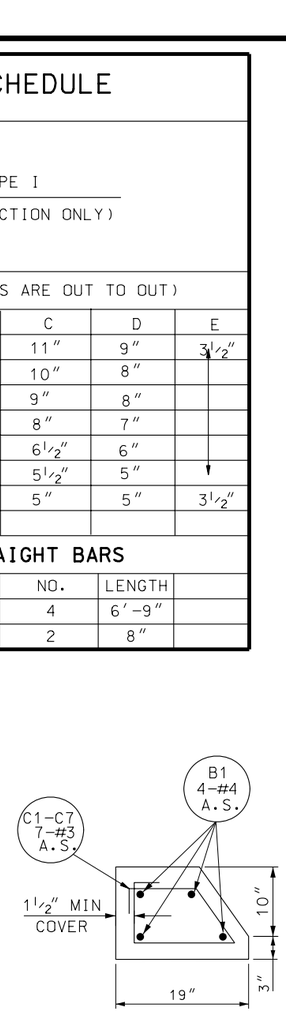
NOTE:
ALL REINFORCING BARS TO HAVE
1½″ MINIMUM COVER.

STRAIGHT BARS

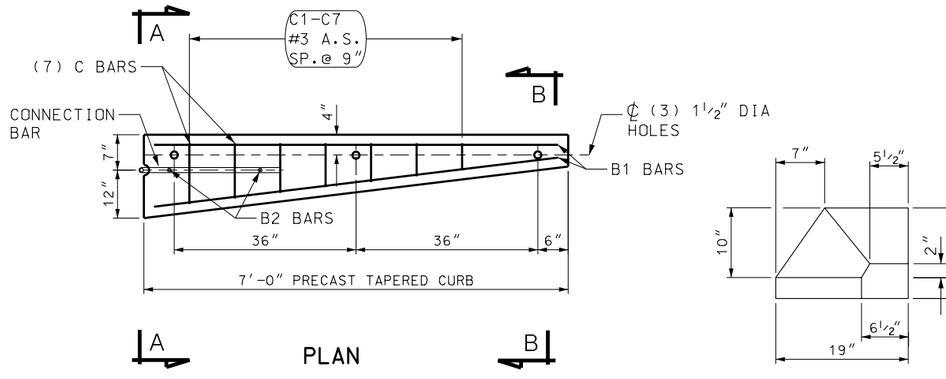
MARK	SIZE	NO.	LENGTH	
B1	#4	4	6′-9″	
B2	#4	2	8″	



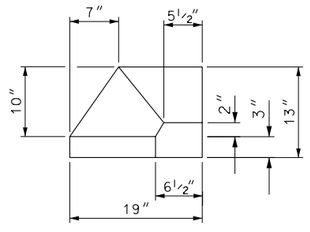
CONNECTION BAR



SECTION A-A



PLAN



SECTION B-B

NEW JERSEY SHAPED CURB SECTION

REVISIONS				
NO.	DATE	APPR.		REMARKS
1	02/24/05	G.S.	NEW DRAWING.	

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

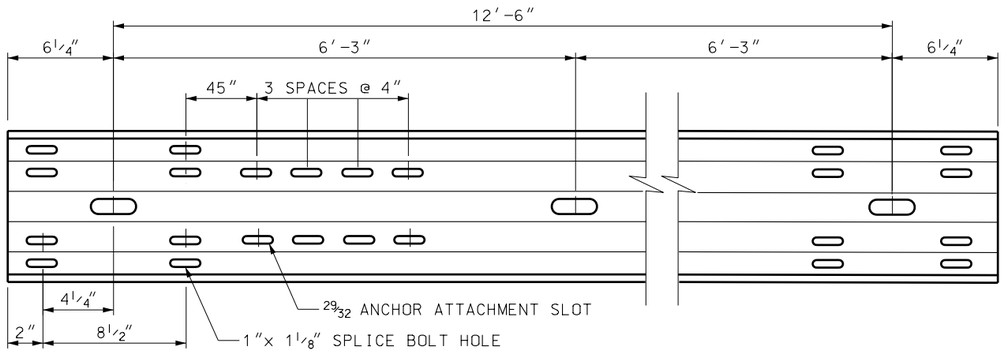
RECOMMENDED FOR APPROVAL — FEB.24,2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.24,2005 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL TRANSITION CURB SECTIONS

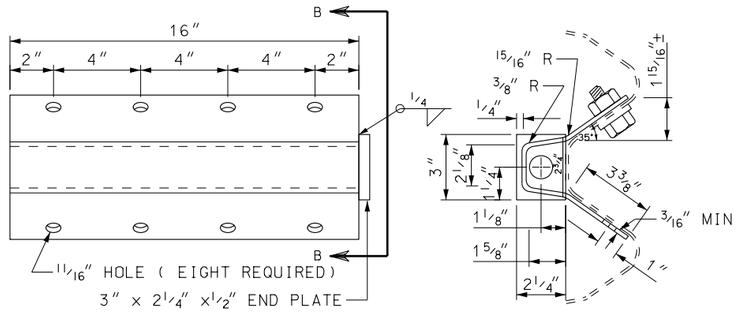
STANDARD DRAWING TITLE

STD DWG
BA 4C

DGN File: N:\Eas\Standard_Drawings\Imperial\2005Approved\vChanges\Approved\BA04C.dgn
14-MAR-2005



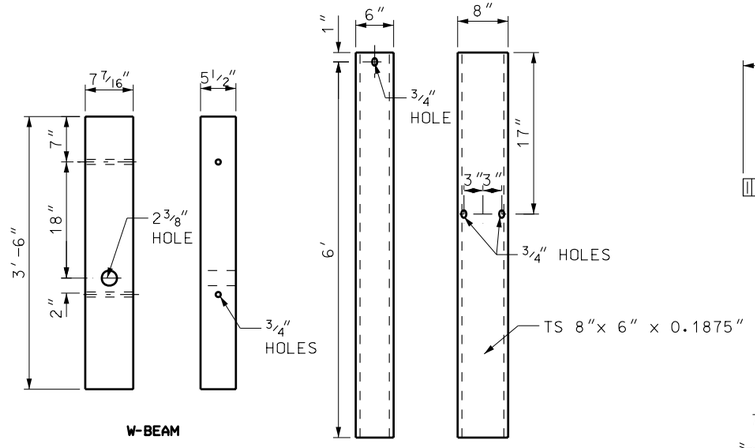
RAIL ELEMENT



ELEVATION

SECTION B-B

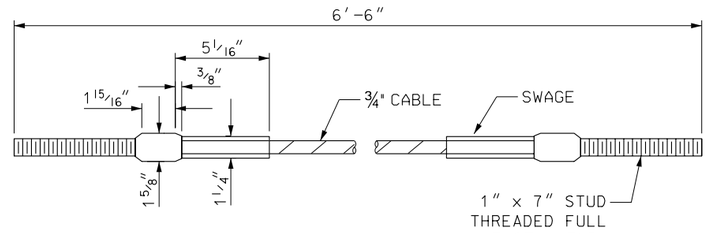
ANCHOR PLATE



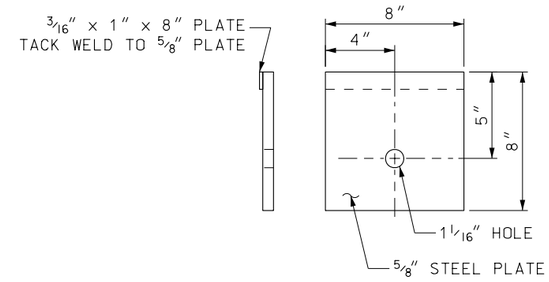
W-BEAM

WOOD BREAKAWAY POST

FOUNDATION TUBE

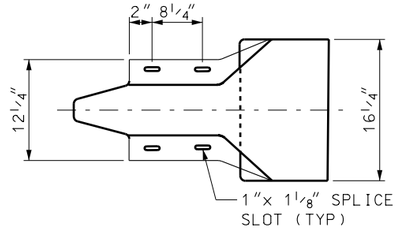


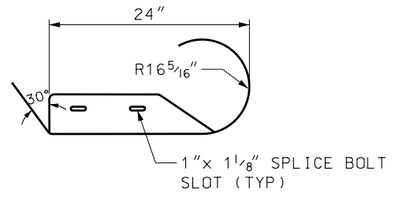
ANCHOR CABLE



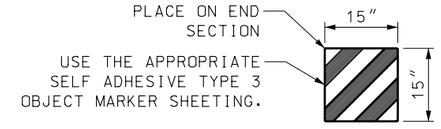
NOTE:
INSTALL BEARING PLATE WITH 5″ PORTION UP. SECURE PLATE TO POST USING TWO NAILS AT TOP OF PLATE.

BEARING PLATE

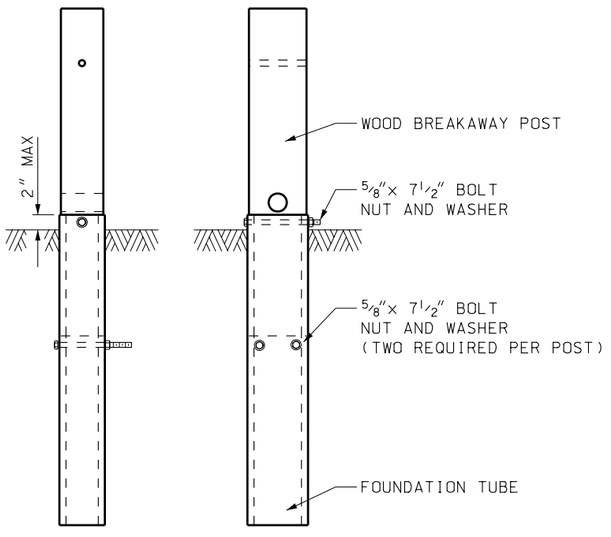




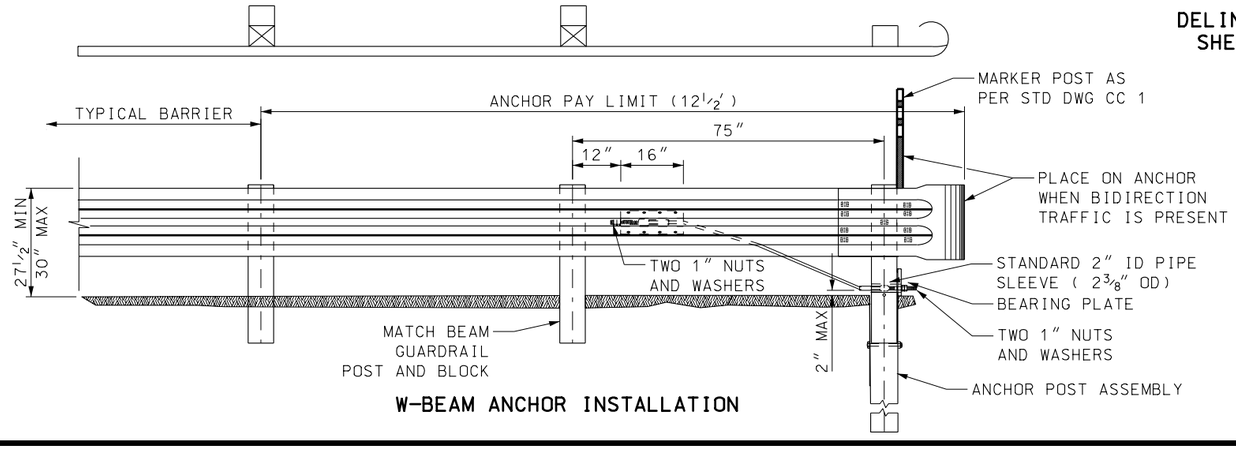
END SECTION (ROUNDED)



DELINEATION SHEETING



ANCHOR POST ASSEMBLY



W-BEAM ANCHOR INSTALLATION

REVISIONS

NO.	DATE	APPR.	REMARKS
1	10/27/05	G.S.	REMOVED SOIL PLATE REQUIREMENT. REVISED W-BEAM ANCHOR INSTALLATION DETAIL. REVISED DIMENSIONS ON BREAKAWAY POST AND FOUNDATION TUBE.
2	11/30/06	G.S.	ADDED DELINEATION MARKER AND POST TO W-BEAM ANCHOR INSTALLATION.

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — NOV. 30, 2006 — DATE

CHAIRMAN STANDARDS COMMITTEE

APPROVED — NOV. 30, 2006 — DATE

DEPUTY DIRECTOR

W-BEAM GUARDRAIL ANCHOR TYPE I

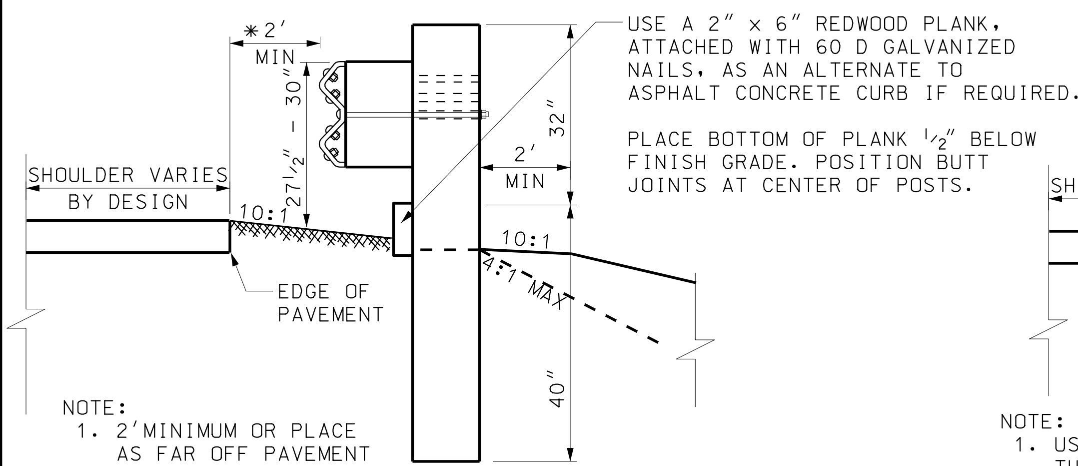
STANDARD DRAWING TITLE

STD DWG

BA 4D

DGN File: L:\Standard_Drawings\Imperial\2005Approved\Changes8Approved\BA04D.dgn

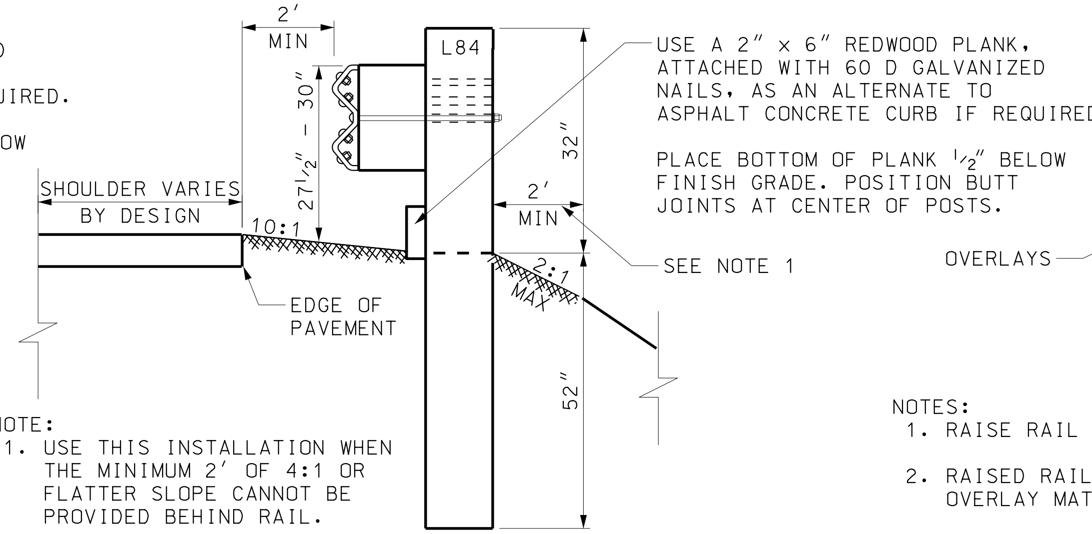
18-DEC-2006



NOTE:
1. 2′MINIMUM OR PLACE AS FAR OFF PAVEMENT EDGE AS PRACTICAL.

INITIAL INSTALLATION

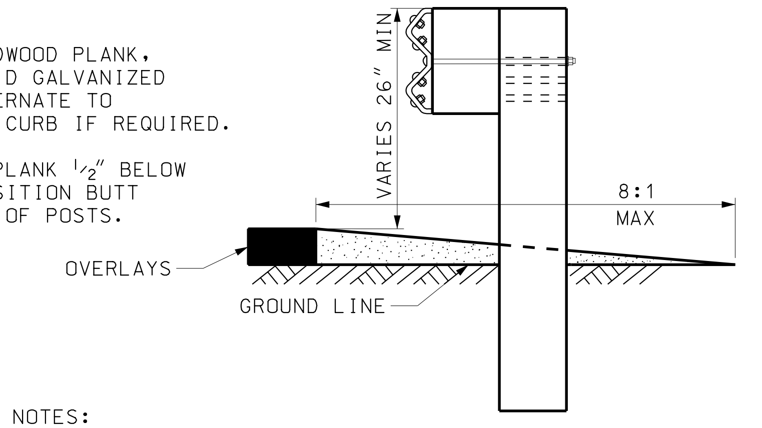
USE 72″ LONG POSTS



NOTE:
1. USE THIS INSTALLATION WHEN THE MINIMUM 2′ OF 4:1 OR FLATTER SLOPE CANNOT BE PROVIDED BEHIND RAIL.

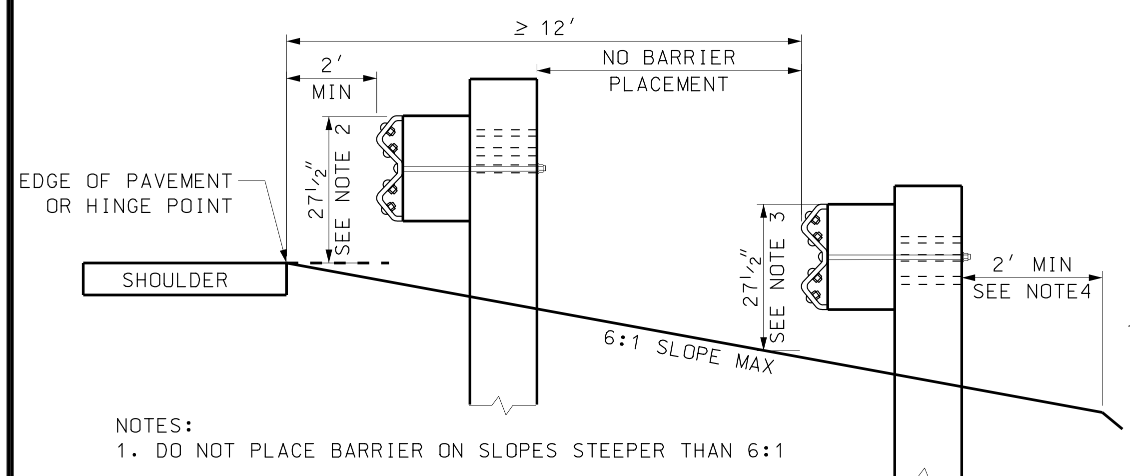
INITIAL LONG POST INSTALLATION

USE 84″ LONG POSTS



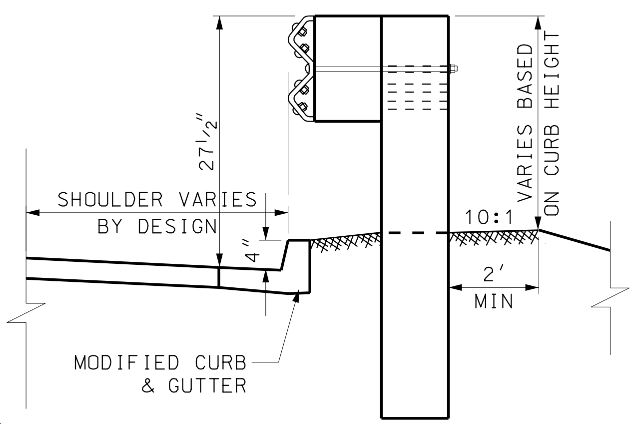
NOTES:
1. RAISE RAIL ELEMENT WHEN OVERLAY IS REQUIRED.
2. RAISED RAIL ELEMENT WILL ACCOMMODATE 6″ TO 8″ OF OVERLAY MATERIAL.
3. SLOPE OF SHOULDER INTO FACE OF RAIL NOT TO EXCEED 8:1.
4. RAISE REDWOOD PLANKING WHEN REQUIRED.
5. RAISING THE RAIL ELEMENT TO MAXIMUM HEIGHT REQUIRED BEFORE THE MINIMUM HEIGHT OF THE RAIL ELEMENT ABOVE GROUND LEVEL CAN BE REDUCED TO THE MINIMUM OF 25″.

RAIL ELEMENT RAISED



NOTES:
1. DO NOT PLACE BARRIER ON SLOPES STEEPER THAN 6:1
2. MEASURE RAIL HEIGHT FROM SHOULDER LINE OR HINGE POINT EXTENDED. USE BOTTOM BOLT HOLE FOR BLOCK AND RAIL ATTACHMENT.
3. MEASURE RAIL HEIGHT FROM GROUND LINE WHEN BARRIER IS PLACED 12 FEET OR GREATER FROM EDGE OF SHOULDER. USE CENTER BOLT HOLE FOR BLOCK AND RAIL ATTACHMENT.
4. USE 84 INCH POST IF THE 6:1 SLOPE CANNOT BE MAINTAINED 2 FEET BEHIND THE LINE POSTS.

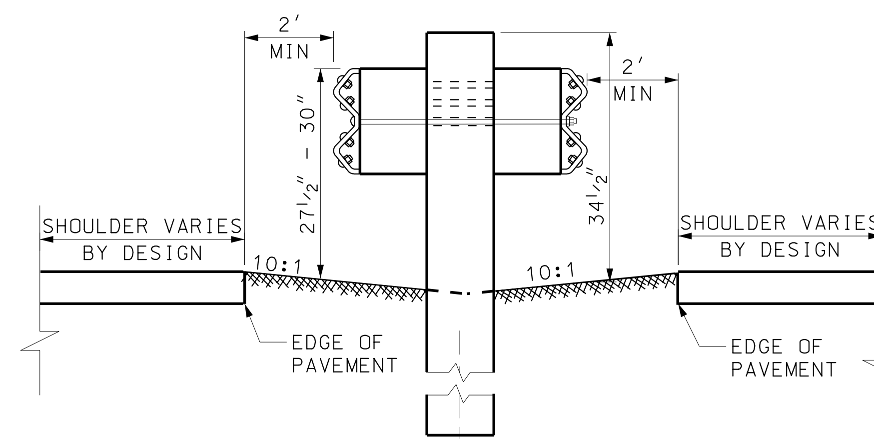
BARRIER INSTALLATION ON 6:1 SLOPE



SEE STD DWG BA 4S SERIES FOR SPECIFIC INSTALLATION REQUIREMENTS

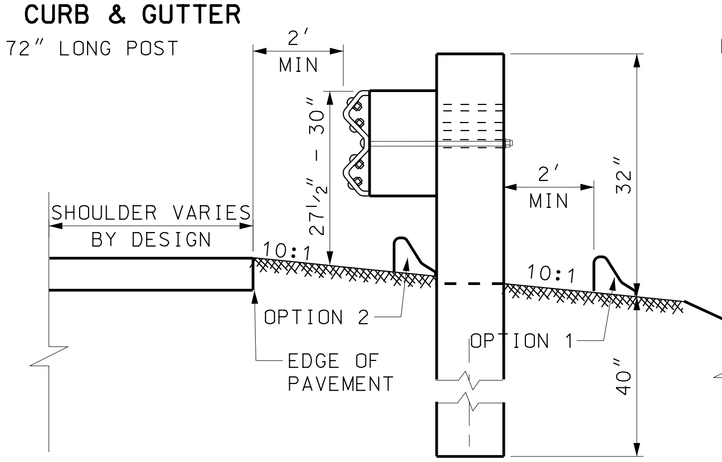
INSTALLATION W/MODIFIED TYPE B1 CURB & GUTTER

USE 72″ LONG POST



NOTES:
1. IF MEDIAN BARRIER IS PLACED 10′ OR GREATER FROM TRAVEL LANES USE TOP HOLE TO MOUNT BLOCK & RAIL.
2. RAISE BOTH RAIL ELEMENTS AS PER RAIL ELEMENT RAISED DETAIL, WHEN REQUIRED.
3. ATTACH REQUIRED DELINEATION ON THE POST.

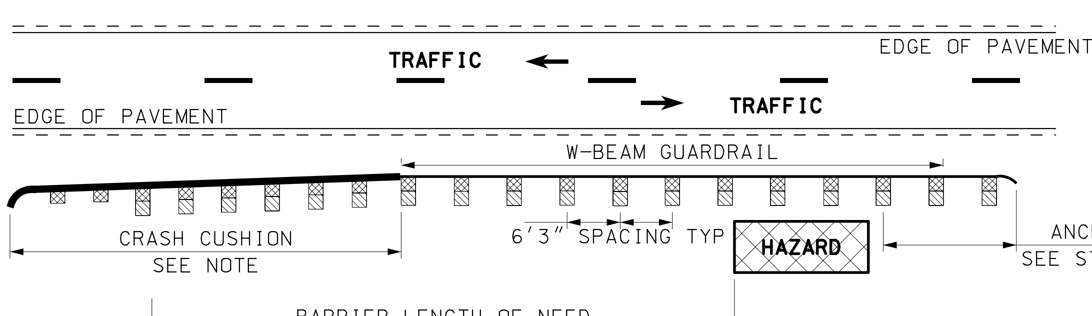
MEDIAN BARRIER



OPTION 1: PREFERRED INSTALLATION.

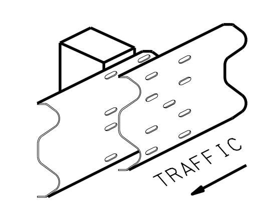
OPTION 2: PLACE FACE OF ASPHALT CONCRETE CURB BEHIND FACE OF RAIL. 2″ MAXIMUM CURB HEIGHT WHEN USED IN FRONT OF POST.

INSTALLATION W/ASPHALT CONCRETE CURB



NOTE:
1. CRASH CUSHION REQUIRED WHEN BARRIER END IS WITHIN 1.2 TIMES AASHTO ROADSIDE DESIGN GUIDE CLEAR ZONE.

TYPICAL INSTALLATION



SPLICE LAP DETAIL

REVISIONS

NO.	DATE	APPR.	REMARKS
1	11/30/06	G.S.	ADDED NOTE UNDER CURB AND GUTTER DETAIL. REVISED ASPHALT CONCRETE CURB OPTION 2. REVISED BARRIER ON 6:1 SLOPE DETAIL.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — NOV. 30, 2006 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED

DEPUTY DIRECTOR — NOV. 30, 2006 DATE

W-BEAM GUARDRAIL INSTALLATIONS

STANDARD DRAWING TITLE

STD DWG

BA 4E

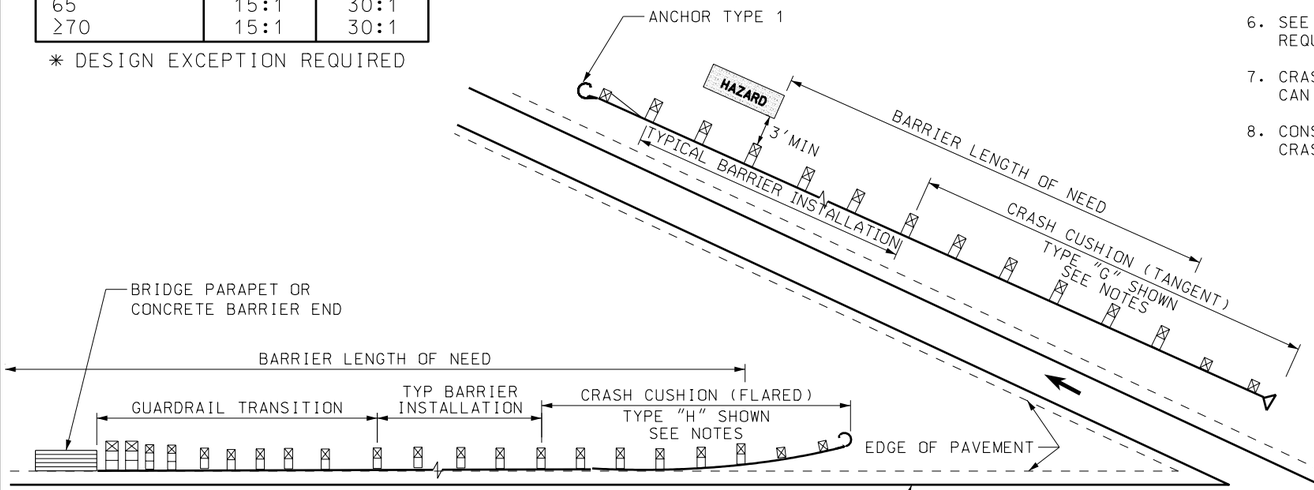
DGN File: L:\Standard_Drawings\Imperial\2005Approved\xChange8Approved\ba04E.dgn
18-DEC-2006

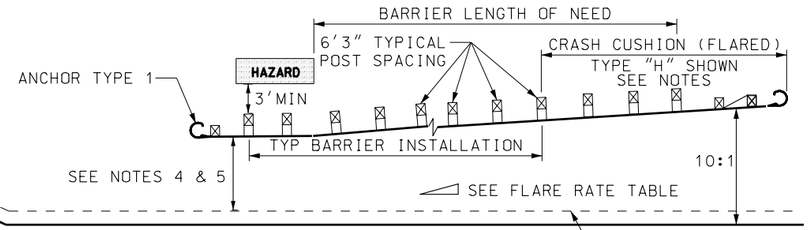
FLARE RATE TABLE		
SPEED (MPH)	RATE OUTSIDE SHY LINE	* RATE INSIDE SHY LINE
≤35	7:1	13:1
40	8:1	16:1
45	10:1	18:1
50	11:1	21:1
55	12:1	24:1
60	14:1	26:1
65	15:1	30:1
≥70	15:1	30:1

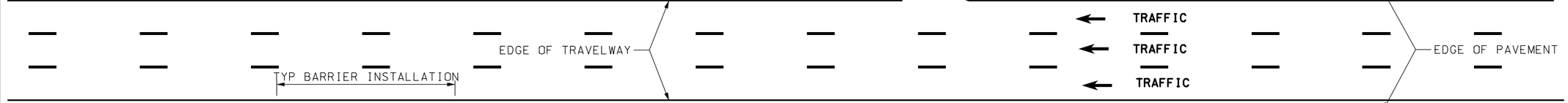
* DESIGN EXCEPTION REQUIRED

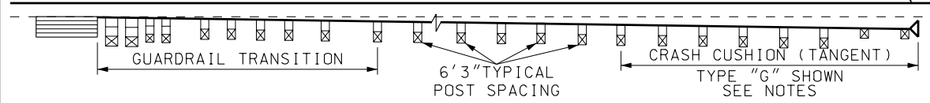
NOTES:

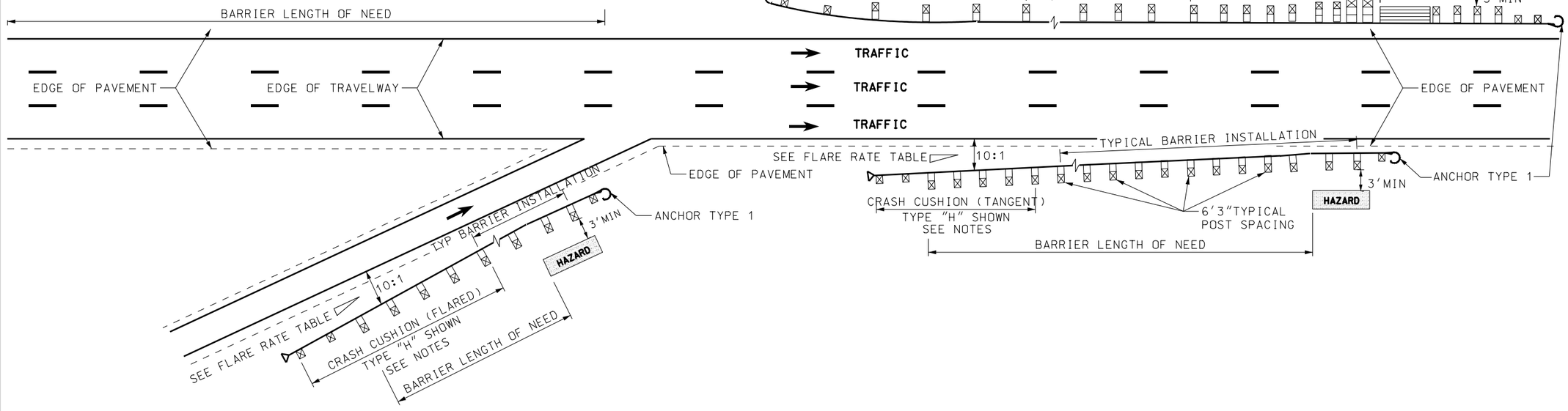
1. CRASH CUSHION REQUIRED WHEN BARRIER END OR PARAPET END IS WITHIN 1.2 TIMES AASHTO ROADSIDE DESIGN GUIDE CLEAR ZONE REQUIREMENTS.
2. CONSIDER USING BURIED TERMINAL END, UDOT STD DWG BA 4I OR BA 4J WHEN CONDITIONS PERMIT.
3. USE FLARED GUARDRAIL INSTALLATIONS WHEN POSSIBLE.
4. USE SLOPES NO STEEPER THAN 10:1 FROM THE EDGE OF TRAVEL LANE TO THE FACE OF THE GUARDRAIL WHEN PLACED WITHIN 12′ OF THE TRAVEL LANE.
5. WHEN PLACED 12′ OR MORE FROM THE EDGE OF PAVEMENT, GUARDRAIL INSTALLATION CAN BE PLACED ON A SLOPE AS STEEP AS 6:1. SEE STD DWG BA 4E.
6. SEE STD DWG BA 4 SERIES FOR INSTALLATION, TRANSITION, AND ANCHOR REQUIREMENTS.
7. CRASH CUSHIONS SHOWN ARE FOR ILLUSTRATION. TYPES "G" AND "H" CAN BE USED ON TANGENT OR FLARED GUARDRAIL INSTALLATIONS.
8. CONSULT GUIDELINES FOR CRASH CUSHIONS AND STD DWGS, CC SERIES FOR PROPER CRASH CUSHION SELECTION AND INSTALLATION REQUIREMENTS.











REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED — JAN.01.2005 DATE

DEPUTY DIRECTOR

W-BEAM GUARDRAIL TYPICALS DIVIDED ROADWAYS

STANDARD DRAWING TITLE

STD DWG
BA 4F

DGN File:N:\Est\Standard Drawings\Imperial\2005Approved\Barriers (BA)\ba4f.dgn

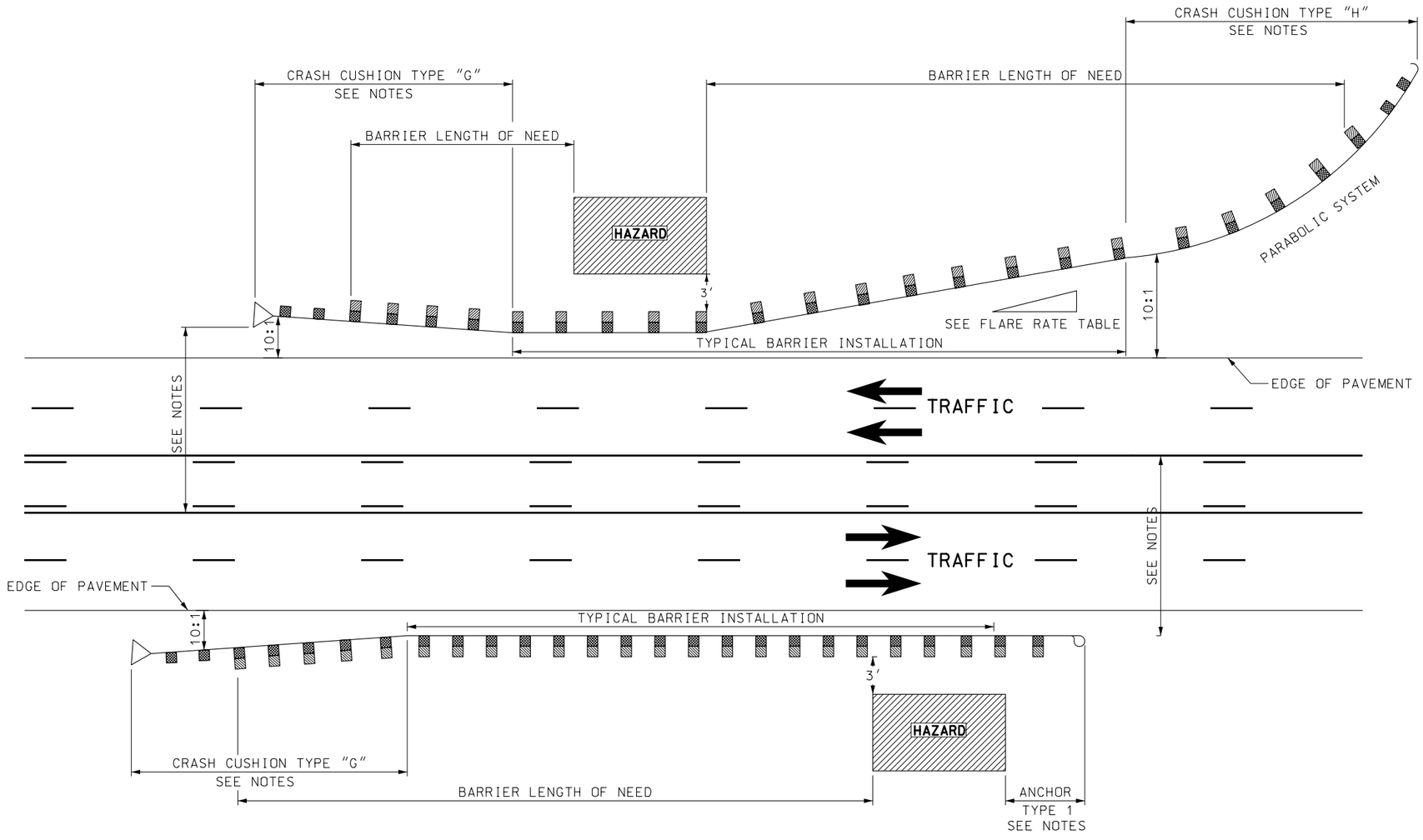
15-DEC-2004

FLARE RATE TABLE		
SPEED (MPH)	RATE OUTSIDE SHY LINE	* RATE INSIDE SHY LINE
≤35	7:1	13:1
40	8:1	16:1
45	10:1	18:1
50	11:1	21:1
55	12:1	24:1
60	14:1	26:1
65	15:1	30:1
≥70	15:1	30:1

* DESIGN EXCEPTION REQUIRED

NOTES:

1. WHEN USING GUARDRAIL BARRIER, AND A RAISED MEDIAN (ISLAND) IS PRESENT OR BEING CONSTRUCTED, AND THE MEDIAN CURB MEETS STD DWG GW 2, NOTE 3 CRITERIA, NOTE 2 OF THIS DRAWING DOES NOT APPLY.
2. USE CRASH CUSHION OR BURIED-IN-BACKSLOPE WHEN END OF GUARDRAIL INSTALLATION IS WITHIN 1.2 TIMES THE AASHTO REQUIRED CLEAR ZONE.
3. USE A CRASH CUSHION OR ANCHOR TYPE I WHEN END OF GUARDRAIL INSTALLATION IS EQUAL TO OR GREATER THAN 1.2 TIMES THE AASHTO CLEAR ZONE, FOR OPPOSING TRAFFIC.
4. CRASH CUSHIONS SHOWN ARE FOR ILLUSTRATION. TYPES "G" AND "H" CAN BE USED ON TANGENT OR FLARED GUARDRAIL INSTALLATIONS.
5. CONSIDER USING BURIED TERMINAL END WHEN CONDITIONS PERMIT.
6. CONSULT GUIDELINES FOR CRASH CUSHIONS AND STD DWGS, CC SERIES FOR PROPER CRASH CUSHION SELECTION AND INSTALLATION REQUIREMENTS.



REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

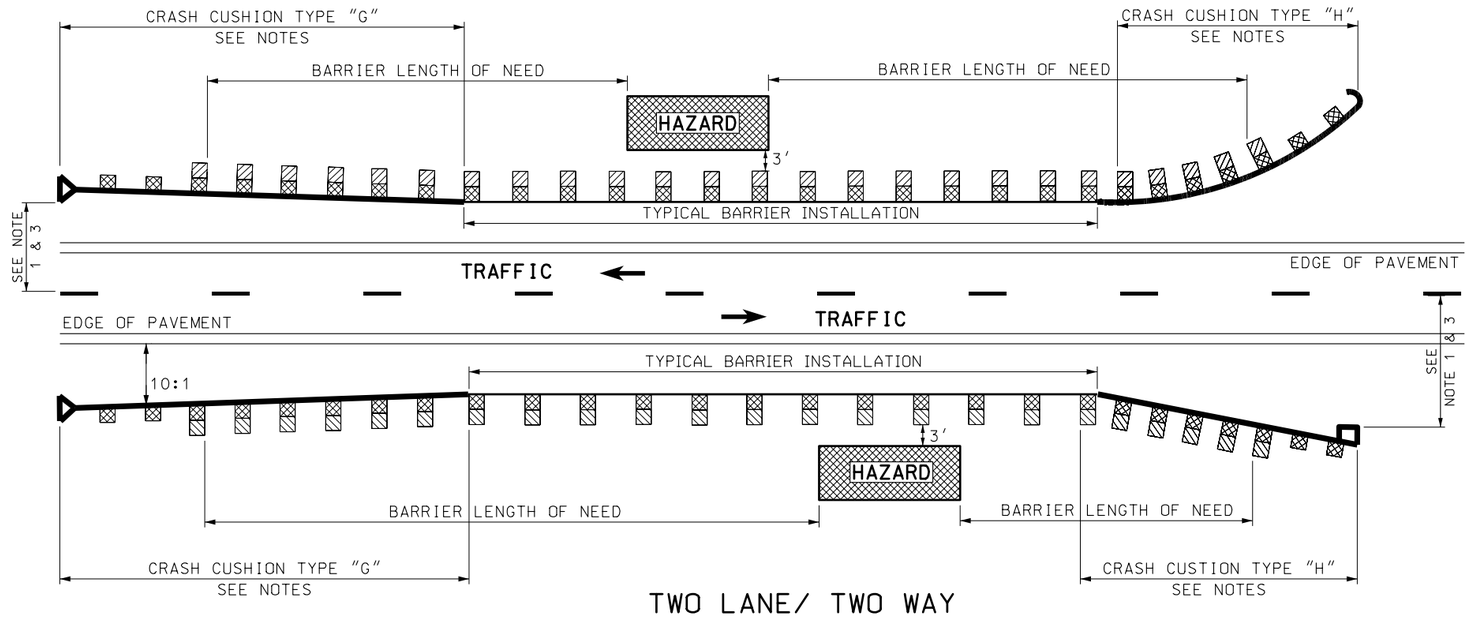
RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL
TYPICAL
MULTILANE ARTERIAL

STANDARD DRAWING TITLE

STD DWG
BA 4G

DGN File:N:\Eng\Standard_Drawings\Imperial\2005Approved\Barriers (BA)\ba4G.dgn
15-DEC-2004



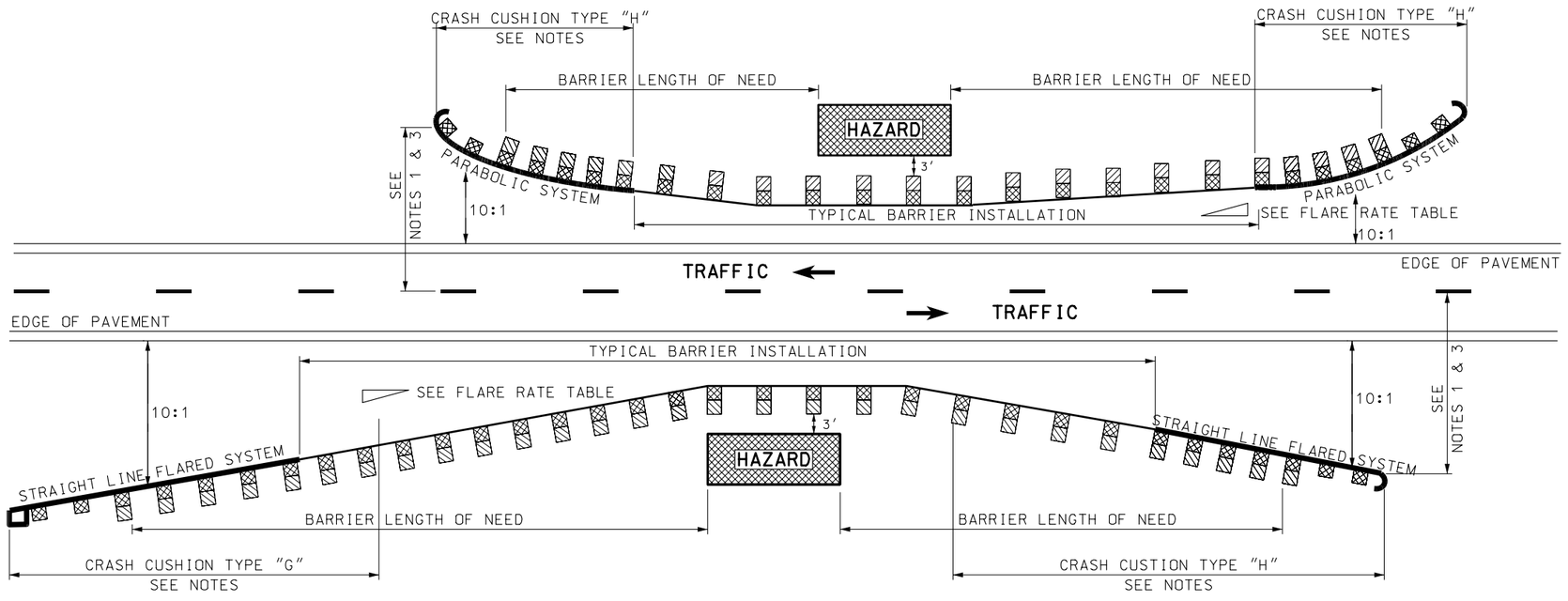
TWO LANE/ TWO WAY TANGENT GUARDRAIL INSTALLATION
(DETAIL BA 4H-1)

NOTES:

1. USE CRASH CUSHION WHEN END OF GUARDRAIL INSTALLATION IS WITHIN 1.2 TIMES THE AASHTO REQUIRED CLEAR ZONE.
2. USE A CRASH CUSHION OR ANCHOR TYPE I WHEN END OF GUARDRAIL INSTALLATION IS EQUAL TO OR GREATER THAN 1.2 TIMES THE AASHTO CLEAR ZONE, FOR OPPOSING TRAFFIC.
3. CRASH CUSHIONS SHOWN ARE FOR ILLUSTRATION. TYPES "G" AND "H" CAN BE USED ON TANGENT OR FLARED GUARDRAIL INSTALLATIONS.
4. CONSIDER USING BURIED-IN-BACKSLOPE TERMINAL END WHEN CONDITIONS PERMIT.
5. CONSULT GUIDELINES FOR CRASH CUSHIONS AND STANDARD DRAWINGS, CC SERIES, FOR PROPER CRASH CUSHION SELECTION AND INSTALLATION.

FLARE RATE TABLE		
SPEED (MPH)	RATE OUTSIDE SHY LINE	* RATE INSIDE SHY LINE
≤35	7:1	13:1
40	8:1	16:1
45	10:1	18:1
50	11:1	21:1
55	12:1	24:1
60	14:1	26:1
65	15:1	30:1
≥70	15:1	30:1

* DESIGN EXCEPTION REQUIRED



TWO LANE/ TWO WAY FLARED GUARDRAIL INSTALLATION
(DETAIL BA 4H-2)

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

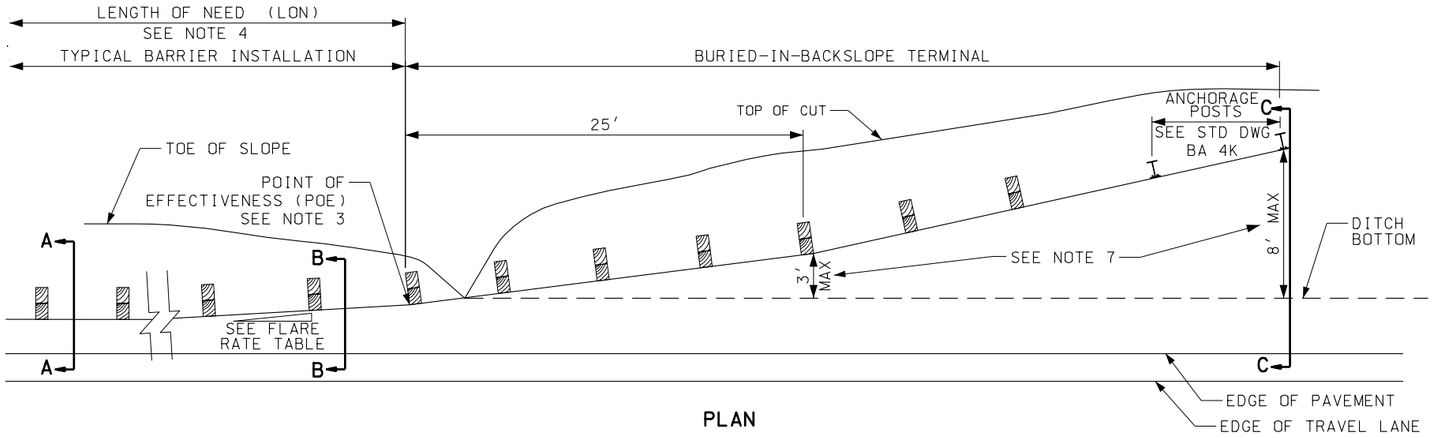
RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL TYPICAL 2 LANE 2 WAY

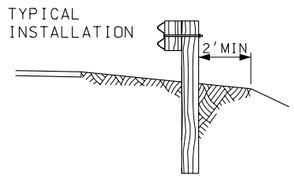
STANDARD DRAWING TITLE

STD DWG
BA 4H

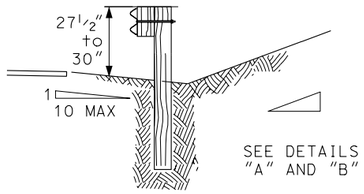
DGN File:N:\Esd\Standard_Drawings\Imperial\2005\approved\Barriers (BA)\ba04H.dgn
15-DEC-2004



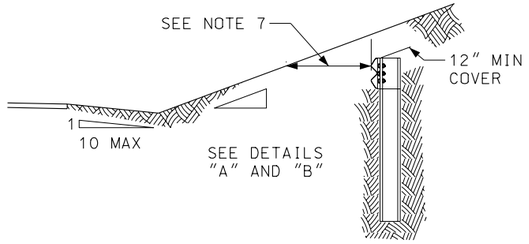
PLAN



SECTION A–A



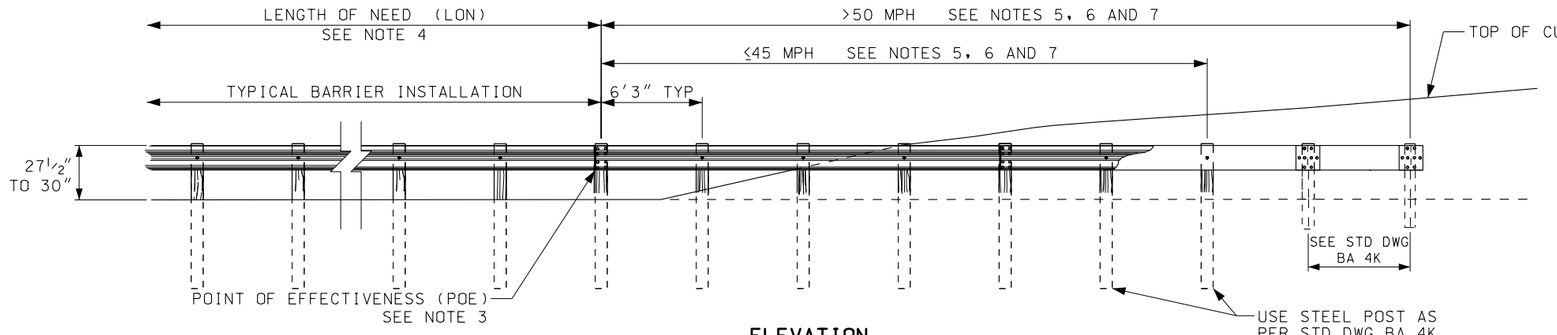
SECTION B–B



SECTION C–C

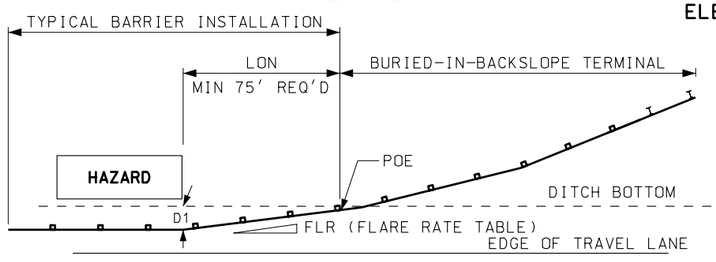
NOTES:

1. PRIOR TO USING THIS DESIGN, CONSULT AREA SUPERVISOR TO ENSURE NO NEED EXISTS FOR ACCESS BEHIND THE BARRIER INSTALLATION AND THAT DRAINAGE ISSUES ARE ADDRESSED.
2. DO NOT USE BURIED-IN-BACKSLOPE TERMINAL IN LOCATIONS WHERE THE BACKSLOPE IS FLATTER THAN 3:1, AND THERE IS NO DITCH OR A NARROW SHALLOW DITCH AND THE TOE OF SLOPE IS WITHIN 20 FEET OF THE TRAVEL LANE.
3. THE POINT OF EFFECTIVENESS (POE) IS AT THE RAIL FACE OF THE FIRST POST OF THE TERMINAL PRIOR TO CROSSING THE DITCH BOTTOM OR TOE OF SLOPE.
4. SEE DETAILS "A" AND/OR "B" FOR LENGTH OF NEED (LON) REQUIREMENTS AND BACKSLOPE REQUIREMENTS.
5. REFER TO STD DWG BA 4K FOR BURIED-IN-BACKSLOPE TERMINAL ANCHORAGE POST DETAILS.
6. CONSTRUCT BURIED IN BACKSLOPE TERMINALS AT 37 ½' FOR SPEEDS 45 MPH AND LESS, AND 50' FOR SPEED 50 MPH AND GREATER.
7. INSTALLATION: STARTING AT THE "POE" SOFTLY BEND RAIL ELEMENT 3' MAXIMUM FROM THE TOE OF SLOPE AT THE 25' POINT OF TERMINAL. FROM THE 25' POINT OF THE TERMINAL TO THE END OF THE TERMINAL SOFTLY BEND RAIL BACK UNTIL THE 1' BURIAL HAS BEEN OBTAINED TO A MAXIMUM OF 8' FROM THE TOE OF SLOPE. IF THE MAXIMUM 8' OFFSET IS REACHED AND THE 1' BURIAL HAS NOT BEEN ACHIEVED, THE BURIED-IN-BACKSLOPE TERMINAL WILL BE SLOPED DOWN WHERE THE END IS 8' BEHIND THE TOE OF SLOPE AND 1' UNDER THE ORIGINAL GROUND LINE. THE BACK SLOPE AT THE ANCHORAGE POSTS SHOULD LOOK THE SAME AFTER INSTALLATION AS PRIOR TO INSTALLATION.
8. INSTALL A STABILIZATION MAT OVER DISTURBED AREA TO CONTROL EROSION, UNLESS DIRECTED DIFFERENTLY BY PROJECT SPECIFICATION OR ENGINEER.
9. USE IN ESTABLISHED SLOPES. DO NOT BUILD A MOUND TO USE THIS TERMINAL.



ELEVATION

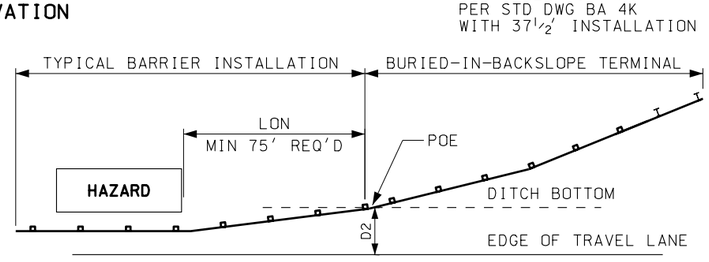
FLARE RATE TABLE (FLR)	
POSTED SPEED (mph)	RATE
40 OR LESS	9:1
45	10:1
50	11:1
55	12:1
60	14:1
65 AND GREATER	15:1



LON = FLR x D1

USE THIS DETAIL IF BACKSLOPE IS STEEPER 3:1.
THIS DETAIL APPLIES AT ALL SPEED LEVELS.

DETAIL A



≥ 50 MPH "LON" = 450 – (15 x D2)
≤ 45 MPH "LON" = 250 – (15 x D2)

USE THIS DETAIL IF BACKSLOPE IS 3:1 TO A MINIMUM 4:1
SEE NOTE 6

DETAIL B

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

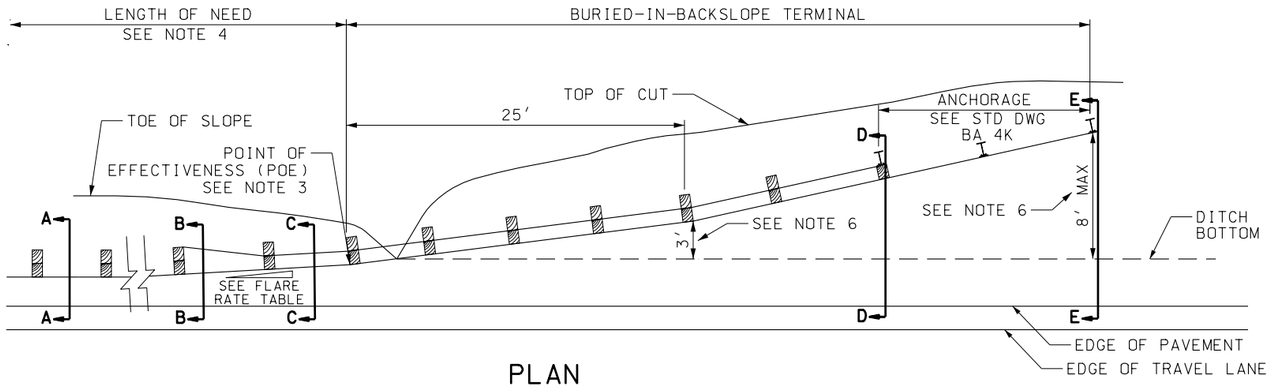
RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL BURIED IN BACKSLOPE TERMINAL

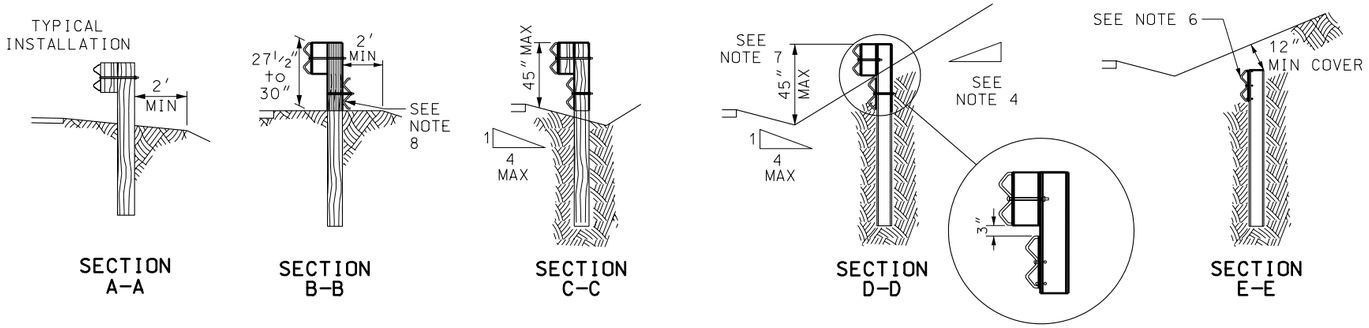
STANDARD DRAWING TITLE

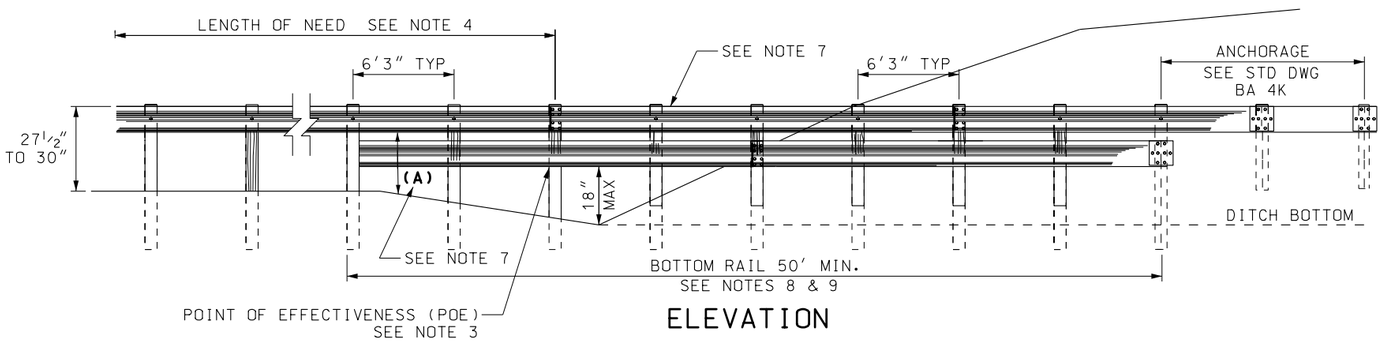
STD DWG
BA 4I

DGN File: N:\Esa\Standard Drawings\Imperial\2005Approved\Barriers (BA)\ba041.dgn
15-DEC-2004

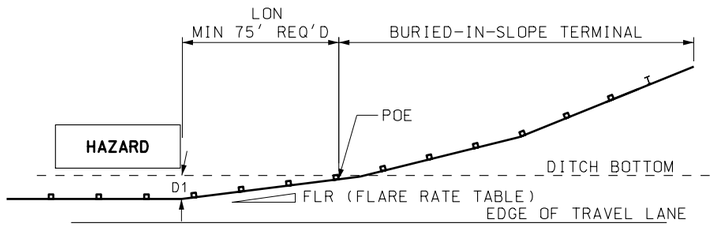


PLAN





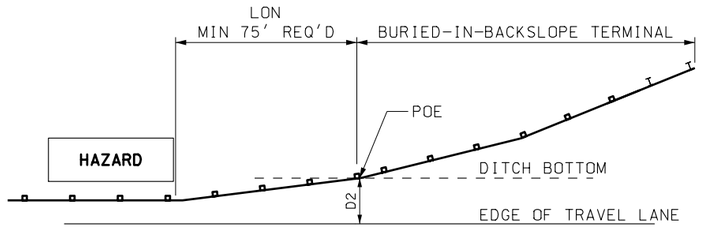
ELEVATION



LON = FLR x D1

USE THIS DETAIL IF BACKSLOPE IS STEEPER THAN 3:1. THIS DETAIL APPLIES AT ALL SPEED LEVELS.

DETAIL A



≥50 MPH "LON" = 450 - (15 x D2)
≤45 MPH "LON" = 250 - (15 x D2)

USE THIS DETAIL IF BACKSLOPE IS 3:1 TO 4:1. SEE NOTE 2.

DETAIL B

NOTES:

1. PRIOR TO USING THIS DESIGN, CONSULT AREA SUPERVISOR TO ENSURE NO NEED EXISTS FOR ACCESS BEHIND THE BARRIER INSTALLATION AND THAT DRAINAGE ISSUES ARE ADDRESSED.
2. DO NOT USE THE BURIED-IN-BACKSLOPE TERMINAL IN LOCATIONS WHERE THE BACKSLOPE IS FLATTER THAN 3:1, AND THERE IS NO DITCH OR A NARROW SHALLOW DITCH AND THE TOE OF SLOPE IS WITHIN 20 FEET OF THE TRAVEL LANE.
3. THE POINT OF EFFECTIVENESS (POE) IS AT THE RAIL FACE OF THE FIRST POST OF THE TERMINAL PRIOR TO CROSSING THE DITCH BOTTOM OR TOE OF SLOPE.
4. SEE DETAILS "A" AND/OR "B" FOR LENGTH OF NEED (LON) REQUIREMENTS AND BACKSLOPE REQUIREMENTS.
5. REFER TO STD DWG BA 4K FOR BURIED-IN-BACKSLOPE TERMINAL ANCHORAGE POST DETAILS.
6. INSTALLATION: STARTING AT THE "POE" SOFTLY BEND RAIL ELEMENT 3' MAXIMUM FROM THE TOE OF SLOPE AT THE 25' POINT OF TERMINAL. FROM THE 25' POINT OF THE TERMINAL TO THE END OF THE TERMINAL SOFTLY BEND RAIL BACK UNTIL THE 1' BURIAL HAS BEEN OBTAINED TO A MAXIMUM OF 8' FROM THE TOE OF SLOPE. IF THE MAXIMUM 8' OFFSET IS REACHED AND THE 1' BURIAL HAS NOT BEEN ACHIEVED, THE BURIED-IN-BACKSLOPE TERMINAL WILL BE SLOPED DOWN WHERE THE END IS 8' BEHIND THE TOE OF SLOPE AND 1' UNDER THE ORIGINAL GROUND LINE. THE BACK SLOPE AT THE ANCHORAGE POSTS SHOULD LOOK THE SAME AFTER INSTALLATION AS PRIOR TO INSTALLATION.
7. HOLD THE TOP GUARDRAIL ELEMENT CONSTANT WITH THE TYPICAL BARRIER INSTALLATION. WHEN THE BOTTOM OF THE TOP GUARDRAIL ELEMENT EXCEEDS 18", AT ANY POINT OF THE SLOPE, POINT (A) ELEVATION VIEW, GO UP STREAM 1 POST AND ADD A BOTTOM RAIL ELEMENT UNDER THE STANDARD GUARDRAIL ELEMENT. IF THE TOP OF INSTALLATION EXCEEDS 45" FROM THE GROUND, AT ANY POINT IN THE INSTALLATION, THEN BOTH ELEMENTS WILL BE SLOPED DOWN TO MAINTAIN A MAXIMUM HEIGHT OF 45" IN FRONT OF THE TOE OF SLOPE.
8. BEND THE DOWNSTREAM END OF BOTTOM RAIL TO THE BACKSIDE OF THE POST AND BOLT TO POST.
9. USE 96" LONG POSTS, WOOD OR STEEL,WITH THE SAME WIDTH DIMENSIONS AS PER STD DWG BA 4, AT LOCATION REQUIRING BOTTOM RAIL ELEMENT. REFER TO STD DWG BA 4K SPECIFIC STEEL POSTS PLACEMENT REQUIREMENTS MARK ALL 96" POSTS WITH L96 WITH THE SAME METHOD AS DESCRIBED IN NOTE 2 OF STD DWG BA 4A.
10. FIELD DRILLED STEEL POSTS ARE ALLOWED FOR BOTTOM RAIL ELEMENT. USE ZINC RICH PAINT TO COAT FIELD DRILLED HOLES IN POSTS OR RAIL ELEMENTS.
11. INSTALL A STABILIZATION MAT OVER DISTURBED AREA TO CONTROL EROSION.
12. USE IN ESTABLISHED SLOPES. DO NOT BUILD A MOUND TO USE THIS TERMINAL.

FLARE RATE TABLE	
SPEED (MPH)	RATE
40 OR LESS	9:1
45	10:1
50	11:1
* ≥55	12½ :1

* FLARE RATE TO BE USED ONLY IN CONJUNCTION WITH A BURIED-IN-BACKSLOPE TERMINAL ON HIGHER SPEED ROADWAYS.

REVISIONS

NO.	DATE	APPR.	REMARKS

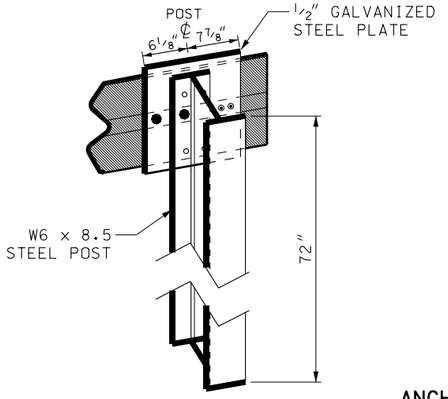
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

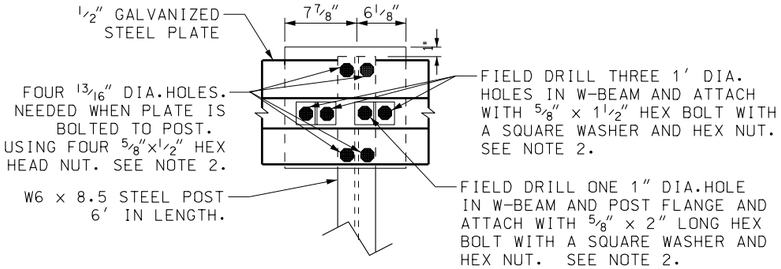
W-BEAM GUARDRAIL
BURIED IN BACKSLOPE
TERMINAL WITH
RUB RAIL

STANDARD DRAWING TITLE

STD DWG
BA 4J

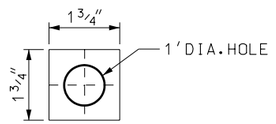


REAR VIEW

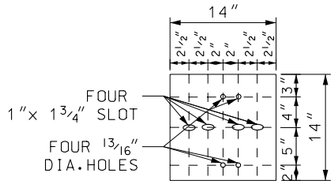


FRONT VIEW

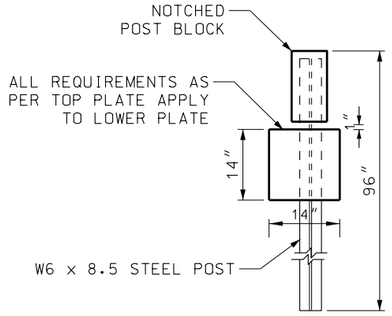
ANCHOR POST/PLATE ATTACHMENT FOR SINGLE RAIL ELEMENT



SQUARE WASHER
(3/16"THICK,GALVANIZED)



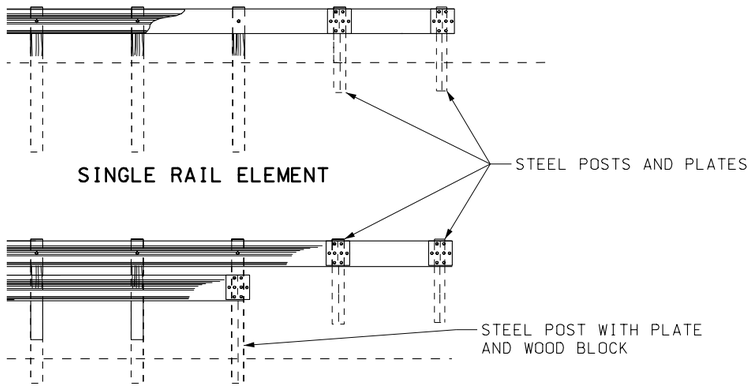
1/2" STEEL PLATE
(GALVANIZED)



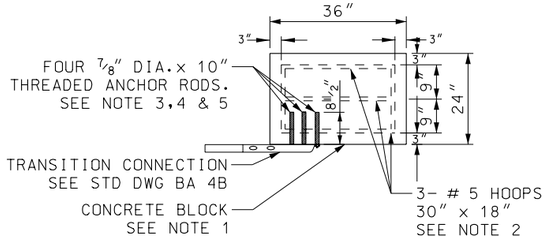
ANCHOR POST/PLATE ATTACHMENT
FOR RUB RAIL ELEMENT

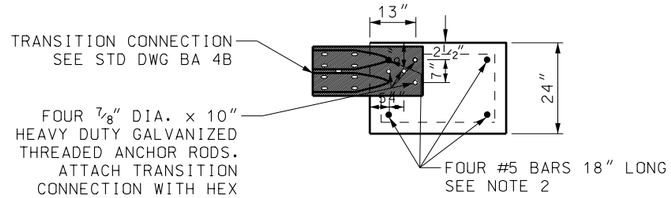
NOTES:

1. USE 1/2" STEEL PLATE MEETING REQUIREMENTS OF ASTM 36.
2. GALVANIZING REQUIRED FOR PLATE AND HARDWARE.
3. USE ZINC RICH PAINT TO COAT FIELD DRILLED HOLES.



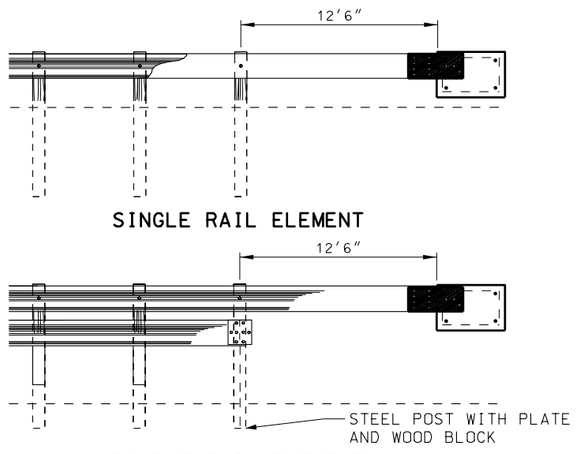
OPTION I
STEEL POSTS AND PLATES





NOTES:

1. USE CONCRETE A(AE).
2. USE COATED REINFORCING STEEL.
3. USE GALVANIZED THREADED ROD.
4. THREADED RODS CAN BE CAST INTO CONCRETE BLOCK OR HOLES CAN BE DRILLED INTO BLOCK AND RODS EPOXIED IN.
5. DRILL HOLES A MINIMUM 9" DEEP. CLEAN DRILLED HOLES PRIOR TO INSERTING TREAD ROD.



OPTION II
CONCRETE BLOCK

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

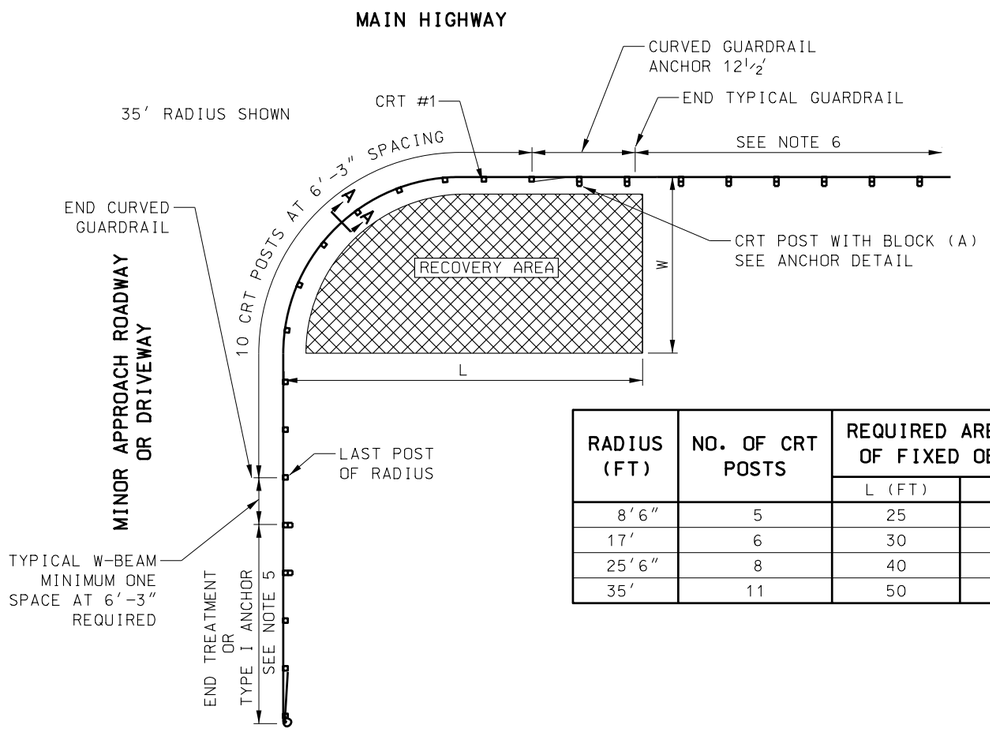
RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL
BURIED IN BACKSLOPE
TERMINAL ANCHOR

STANDARD DRAWING TITLE

STD DWG
BA 4K

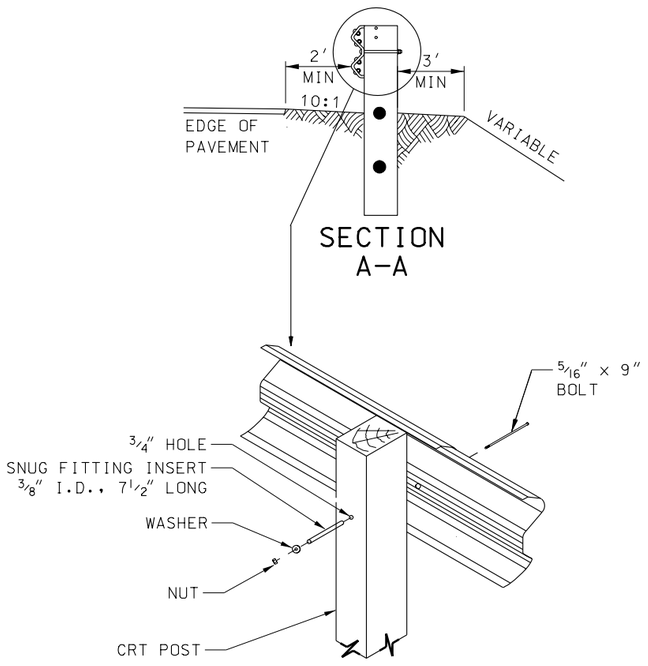
DGN File: N:\Esd\Standard Drawings\Imperial\2005Approved\Barriers (BA)\ba04K.dgn
15-DEC-2004

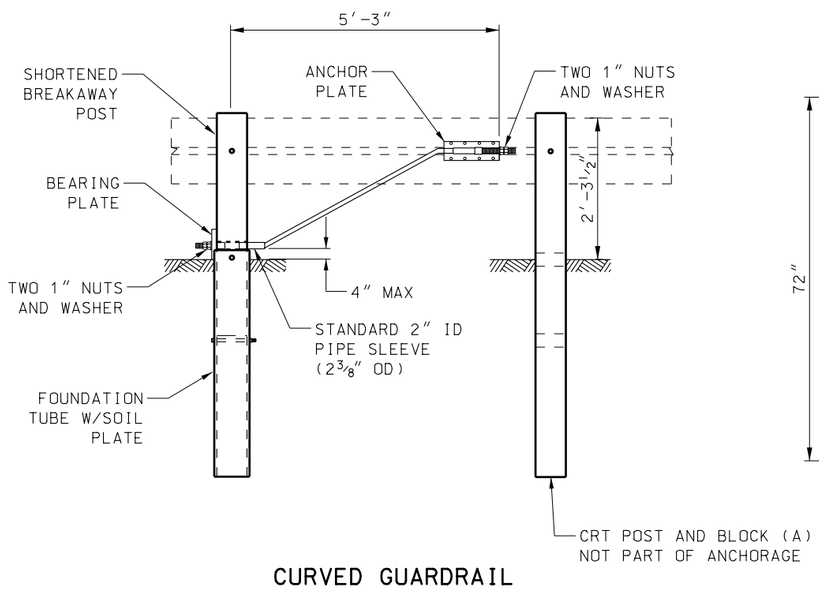


RADIUS (FT)	NO. OF CRT POSTS	REQUIRED AREA FREE OF FIXED OBJECTS	
		L (FT)	W (FT)
8′6″	5	25	15
17′	6	30	15
25′6″	8	40	20
35′	11	50	20

NOTES:

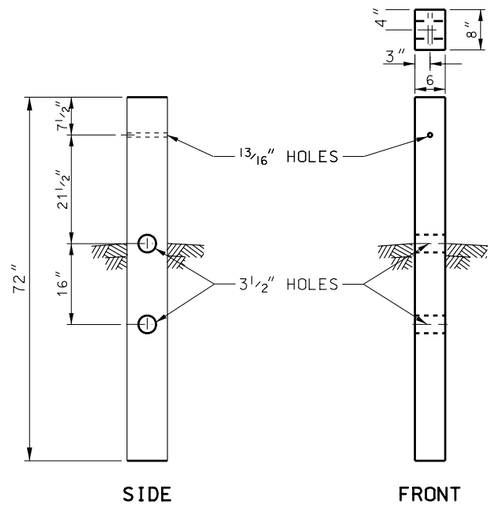
1. LIST RADIUS REQUIREMENT FOR EACH LOCATION IN THE PROJECT PLANS AND SUMMARY SHEET.
2. SHOP BEND RADIUS ELEMENTS. FIELD BENDING IS NOT PERMITTED.
3. RECOVERY AREA BEHIND THE GUARDRAIL TO BE MAINTAINED FREE OF FIXED OBJECTS.
4. MAINTAIN 10:1 SLOPE IN FRONT OF CURVED SECTION.
5. USE END TREATMENTS, TYPE "G" OR "H" ON INTERSECTING ROADWAYS OPEN TO THE GENERAL PUBLIC. USE ANCHOR TYPE I (REFER TO STD DWG BA 4D) ON BUSINESS/RESIDENTIAL DRIVEWAYS, OR RESTRICTED/LIMITED ENTRY ROADWAYS.
6. DO NOT ATTACH DIRECTLY TO W-BEAM GUARDRAIL TRANSITION, BA 4B, INSTALL 12½ FEET OF TYPICAL W-BEAM GUARDRAIL AT END OF TRANSTION PRIOR TO INSTALLING CURVED GUARDRAIL ANCHOR.
7. USE ANCHOR TYPE I WHEN OPPOSING TRAFFIC IS 1.2 TIMES FROM THE REQUIRED CLEAR ZONE.
8. USE NOMINAL DIMENSIONS FOR ALL TIMBER.





CURVED GUARDRAIL ANCHOR

(REFER TO STD DWG BA 4D)



CONTROLLED RELEASE TERMINAL (CRT) POST

SEE NOTE 7

REVISIONS

NO.	DATE	APPR.	REMARKS
1	11/30/06	G.S.	REVISED ANCHOR CABLE PLACEMENT.

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — NOV. 30, 2006 — DATE

CHAIRMAN STANDARDS COMMITTEE

APPROVED — NOV. 30, 2006 — DATE

DEPUTY DIRECTOR

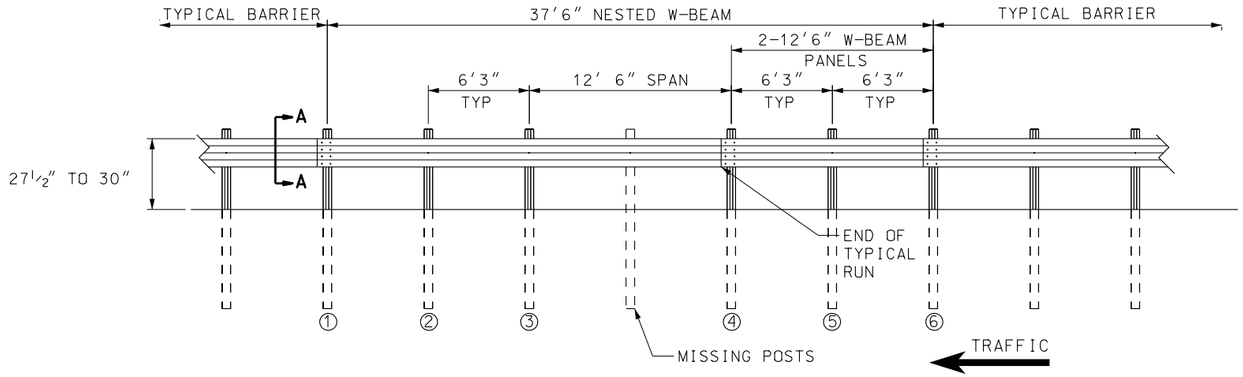
W-BEAM GUARDRAIL CURVE DETAILS

STANDARD DRAWING TITLE

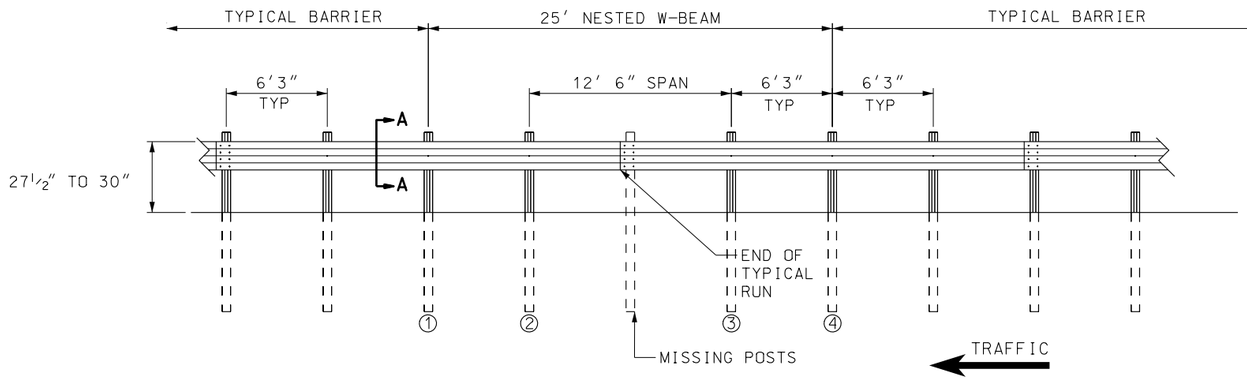
STD DWG BA 4L

DGN File:L:\Standard Drawings\Imperial\2005Approved\Change8Approved\BA04L.dgn

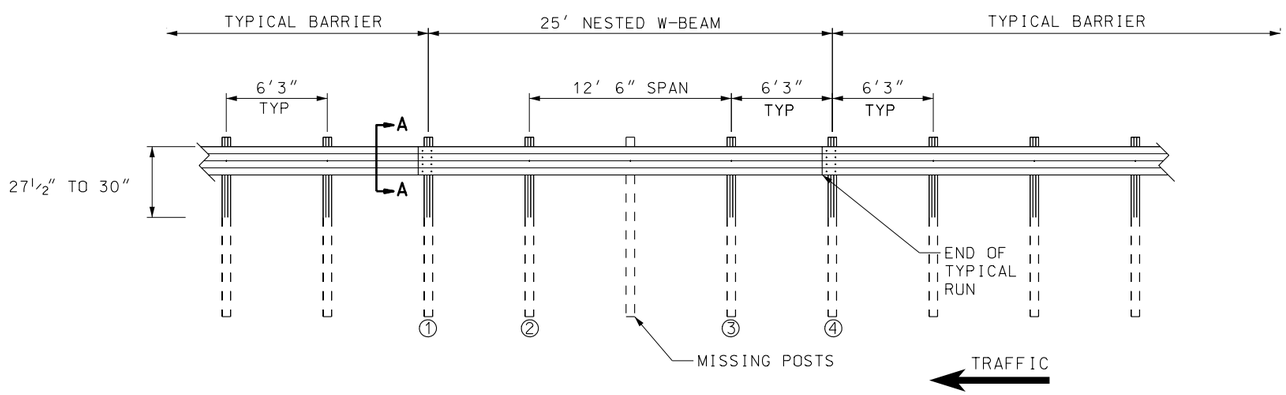
18-DEC-2006



DETAIL A



DETAIL B



DETAIL C

NOTES FOR DETAIL "A"

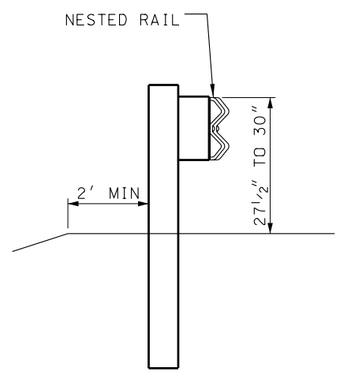
1. SPLICE POINT AT POST 4 OF TYPICAL RUN USING 25' W-BEAM PANEL, ADD AN ADDITIONAL 12'6" PANEL BETWEEN POST 4 AND 6.
2. PLACE A SECOND W-BEAM PANEL BEHIND TYPICAL RUN AT POSTS 1 THROUGH 6 .
3. MAKE ALL SPLICES AND BOLT RAIL ELEMENTS TOGETHER AS PER GUARDRAIL INSTALLATION REQUIREMENTS.

NOTES FOR DETAIL "B"

1. SPLICE POINT BETWEEN POST 2 AND 3 OF TYPICAL RUN USING 25' W-BEAM PANELS.
2. PLACE A SECOND W-BEAM PANEL BEHIND TYPICAL RUN AT POST 1 THROUGH 4.
3. MAKE ALL SPLICES AND BOLT RAIL ELEMENTS TOGETHER AS PER GUARDRAIL INSTALLATION REQUIREMENTS.

NOTES FOR DETAIL "C"

1. SPLICE POINT AT POST 1 AND 4 OF TYPICAL RUN USING 25' W-BEAM PANELS.
2. PLACE A SECOND W-BEAM PANEL BEHIND TYPICAL RUN AT POST 1 THROUGH 4.
3. MAKE ALL SPLICES AND BOLT RAIL ELEMENTS TOGETHER AS PER GUARDRAIL INSTALLATION REQUIREMENTS.



A–A

REVISIONS

NO.	DATE	APPR.	REMARKS

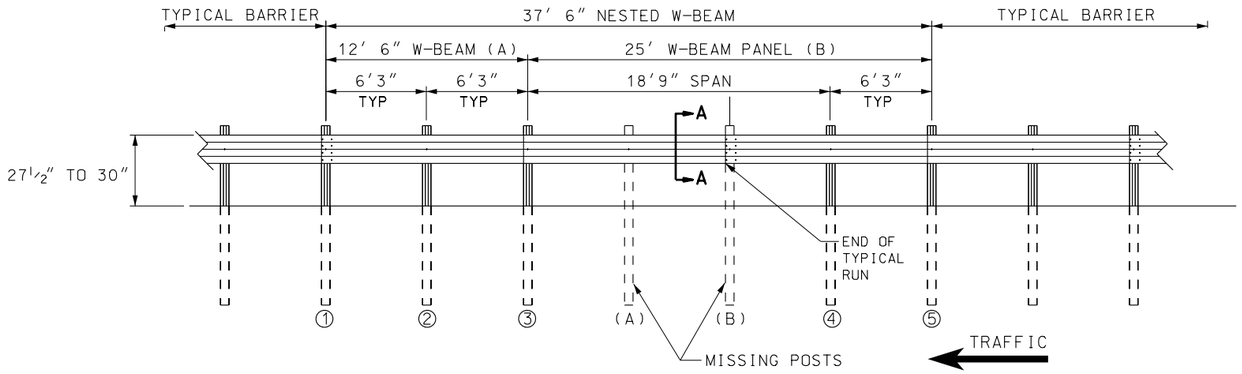
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL NESTED GUARDRAIL 12'6" SPAN

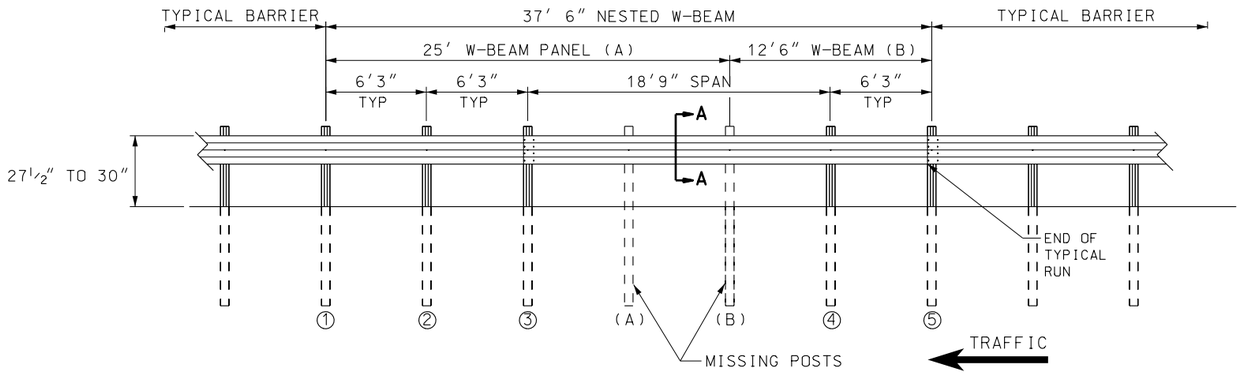
STANDARD DRAWING TITLE

STD DWG
BA 4M



DETAIL A

WHEN END OF TYPICAL RUN IS AT MISSING POST (A) OR (B)



DETAIL B

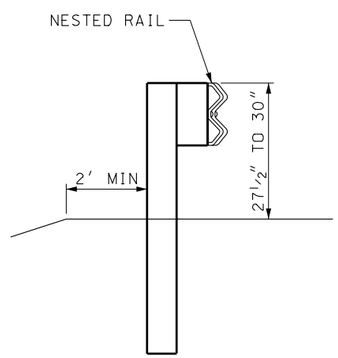
WHEN END OF TYPICAL RUN IS AT POST 4 OR 5

NOTES FOR DETAIL "A"

1. ATTACH 12′6″ W-BEAM PANEL (A) AT POSTS 1 THROUGH 3. ATTACH 25′ W-BEAM PANEL (B) AT POSTS 3, 4, AND 5, SPANNING MISSING POSTS (A) AND (B).
2. PLACE INITIAL RUN OVER RAIL ELEMENTS A & B.
3. MAKE ALL SPLICES AND BOLT RAIL ELEMENTS TOGETHER AS PER GUARDRAIL INSTALLATION REQUIREMENTS.

NOTES FOR DETAIL "B"

1. ATTACH 12′6″ W-BEAM PANEL (B) AT POSTS 4 AND 5. SPLICE 25′ W-BEAM PANEL CONTINUE RUN TO POST 1.
2. PLACE STANDARD RUN OVER RAIL ELEMENTS A & B.
3. MAKE ALL SPLICES AND BOLT RAIL ELEMENTS TOGETHER AS PER GUARDRAIL INSTALLATION REQUIREMENTS.



A-A

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

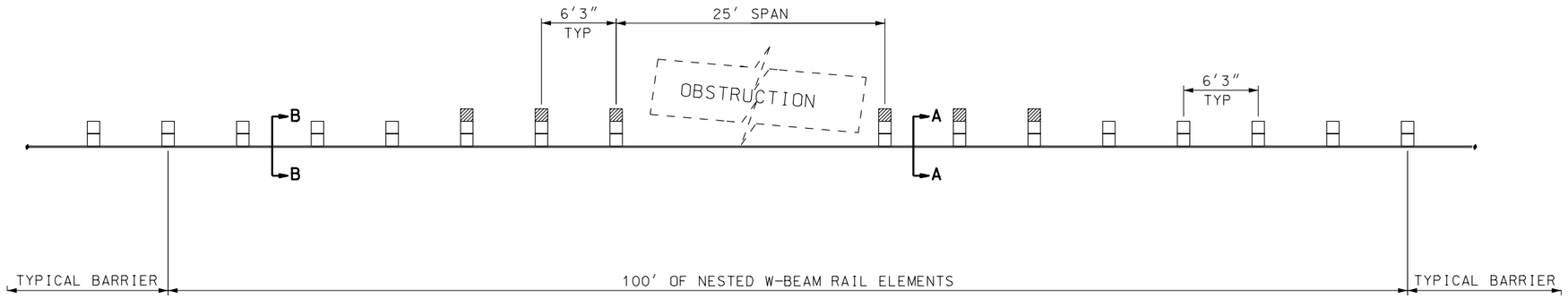
RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — JAN.01.2005 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL
NESTED GUARDRAIL
18′-9" SPAN

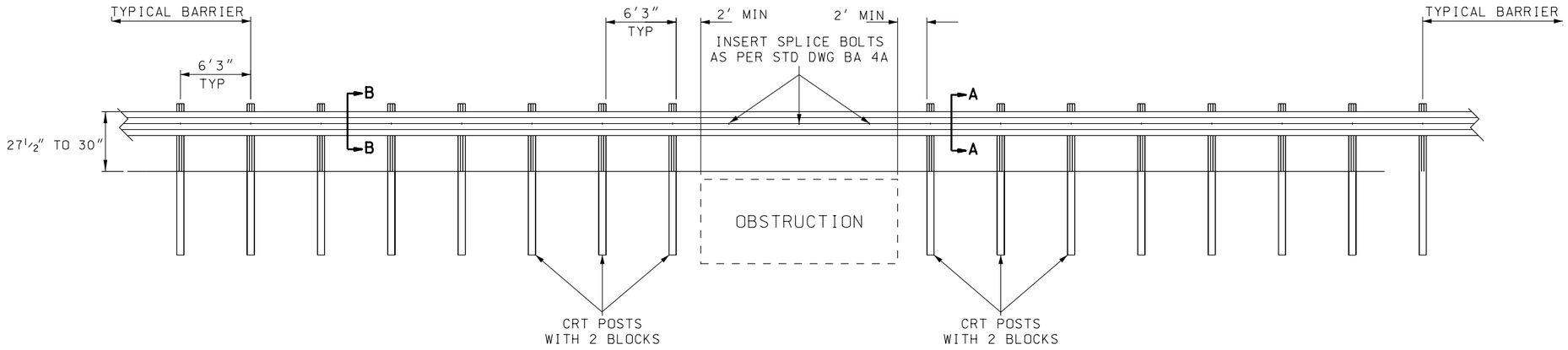
STANDARD DRAWING TITLE

STD DWG
BA 4N

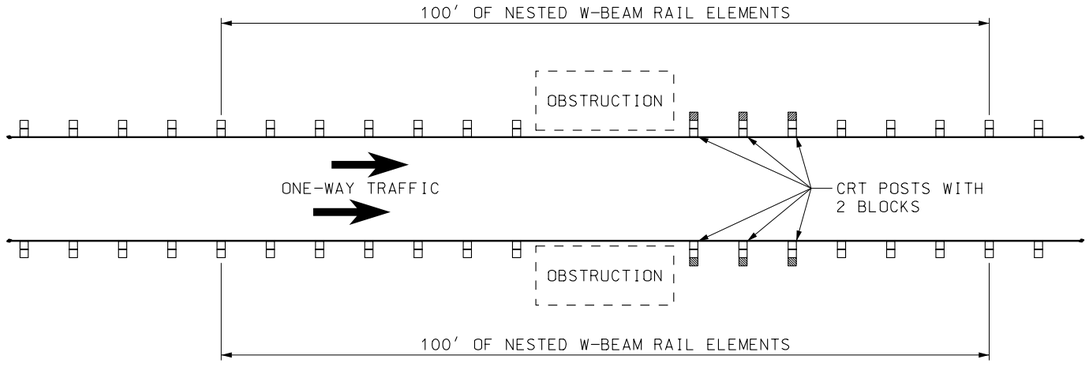
DGN File: N:\Esd\Standard Drawings\Imperial\2005Approved\Barriers (BA)\ba4Nsdgn
15-DEC-2004



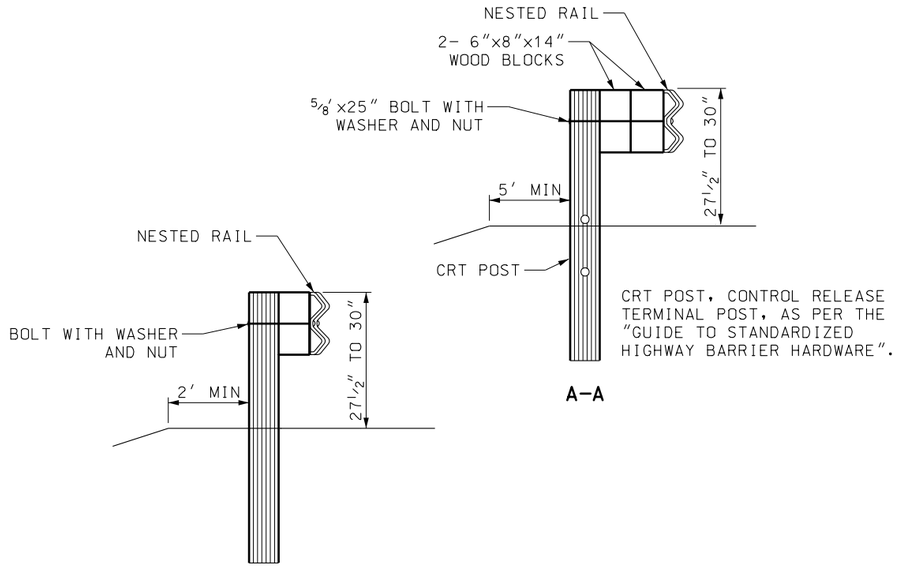
PLAN



ELEVATION



ONE-WAY TRAFFIC LAYOUT



REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — JAN.01.2005 DATE

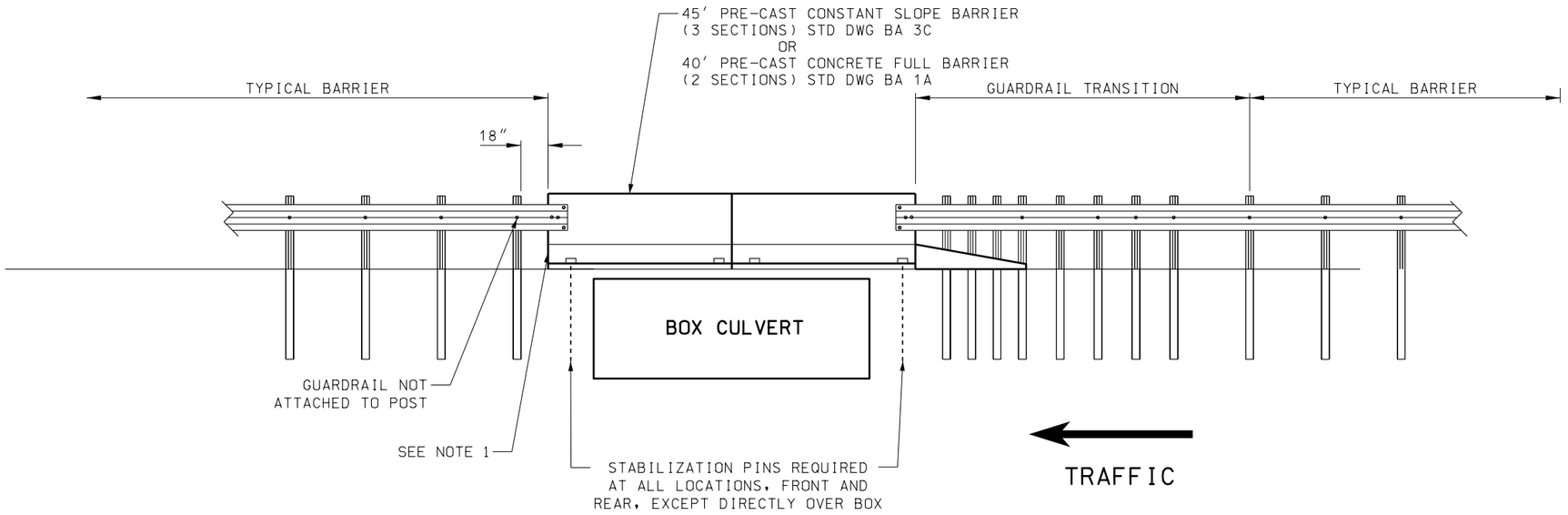
CHAIRMAN STANDARDS COMMITTEE APPROVED — JAN.01.2005 DATE

DEPUTY DIRECTOR

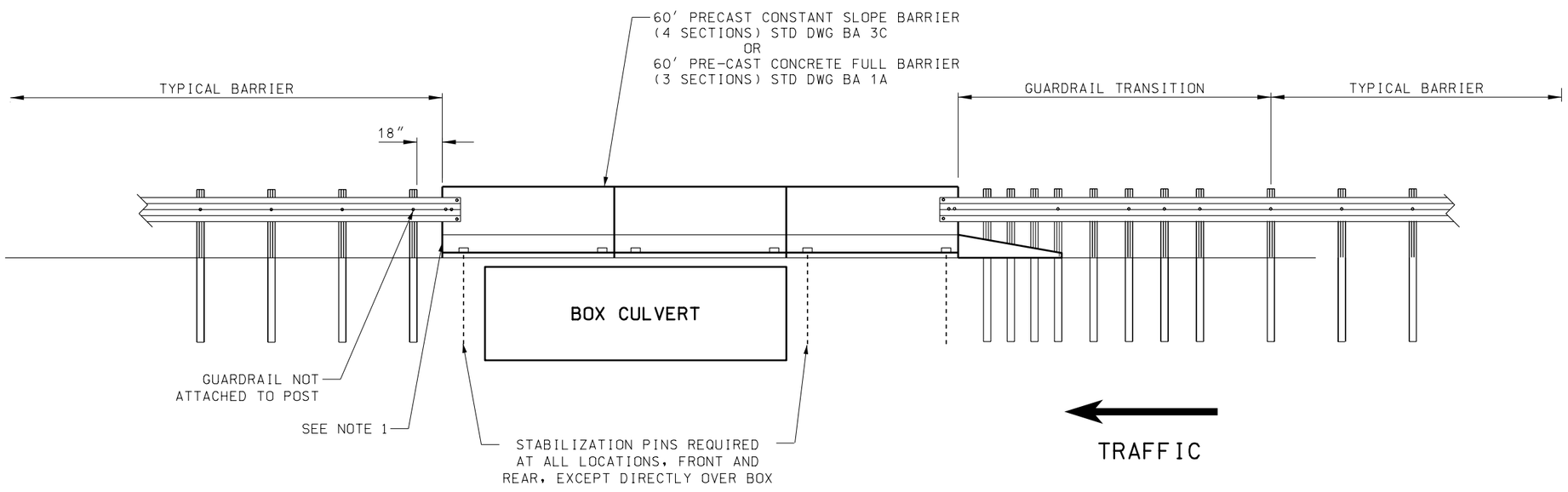
W-BEAM GUARDRAIL NESTED GUARDRAIL 25' SPAN

STANDARD DRAWING TITLE

STD DWG
BA 40



DETAIL A
BOX CULVERT >25′ & ≤30′



DETAIL B
BOX CULVERT >30′

NOTE:

1. INSTALL W-BEAM TRANSITION WHEN TRAFFIC FROM THE OPPOSITE APPROACH IS WITHIN 1.2 TIMES CLEAR ZONE REQUIREMENT.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	11/30/06	G.S.	ADDED NOTE 1.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

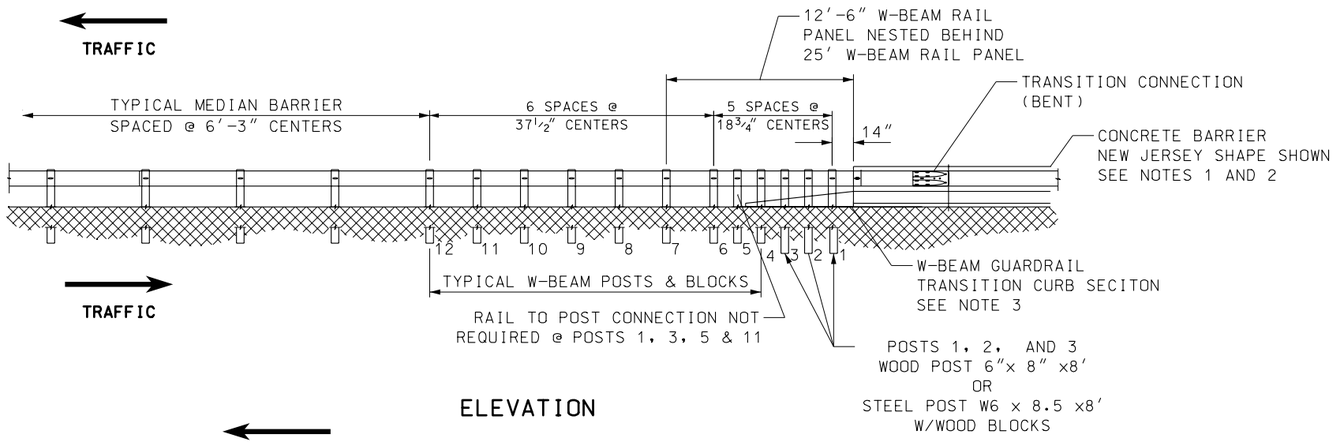
RECOMMENDED FOR APPROVAL — NOV. 30, 2006 — DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — NOV. 30, 2006 — DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL
WITH PRECAST BARRIER
FOR SPAN > 25′

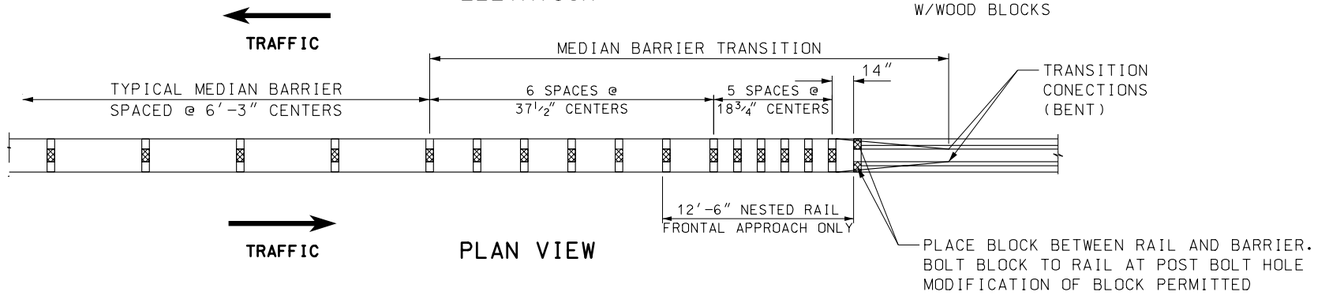
STANDARD DRAWING TITLE

STD DWG
BA 4P

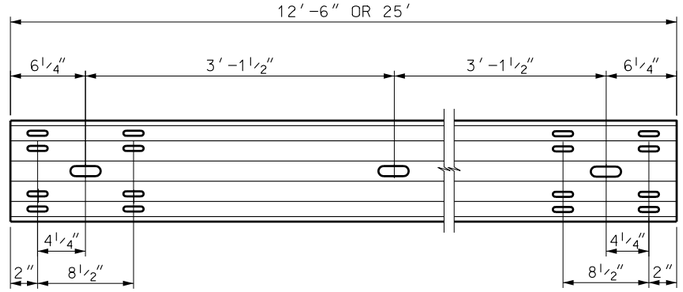
DGN File:L:\Standard Drawings\Imperial\2005Approved\xChange80Approved\BA04P.dgn
18-DEC-2006



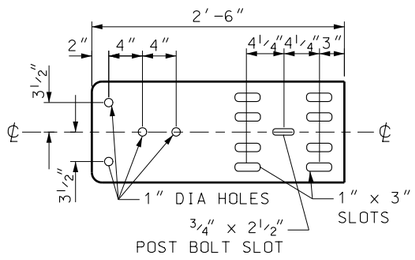
ELEVATION

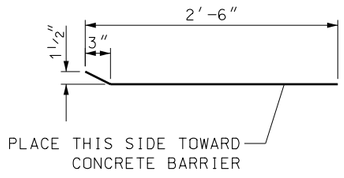


PLAN VIEW

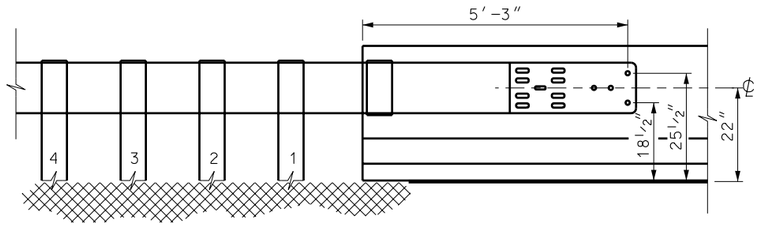


RAIL ELEMENT 12½' OR 25'
3'-1½" O.C. PUNCH

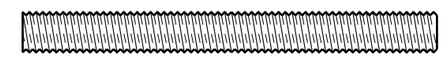




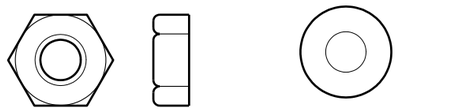
TRANSITION CONNECTION
BENT



TRANSITION CONNECTION
PLACEMENT DETAIL

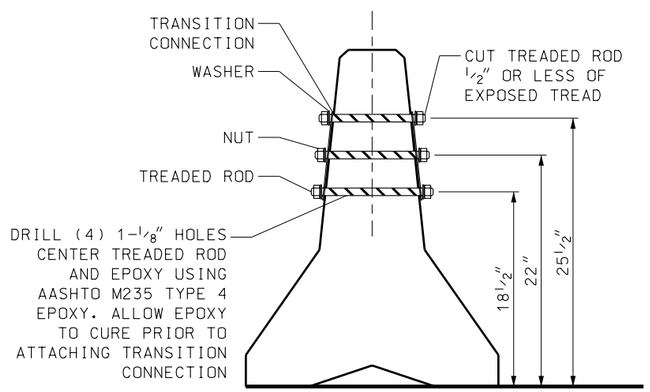


4 EACH ⅞" x 16"
HIGH STRENGTH THREADED ROD



8 EACH ⅞" HEX NUTS 8 EACH ⅞" WASHERS

TRANSITION CONNECTION
HARDWARE (GALVANIZED)



TRANSITION CONNECTION
INSTALLATION DETAIL

NOTES:

1. USE MEDIAN BARRIER TRANSITION WHEN ATTACHING W-BEAM MEDIAN BARRIER TO CONCRETE BARRIER OR WHEN ATTACHING A TYPE "C" CRASH CUSHION.
2. DO NOT USE DETAIL FOR SEPARATED BRIDGE PARAPETS.
3. USE PRECAST CONSTANT SLOPE TRANSITION, STD DWG, BA 3A, WHEN CONNECTING W-BEAM TRANSITION TO CONSTANT SLOPE BARRIER.
4. USE APPROPRIATE CURB SECTION AS PER STD DWD BA 4C. CURB SECTION REQUIRED FOR FRONT APPROACH TRAFFIC ONLY.

REVISIONS				
NO.	DATE	APPR.	REMARKS	
1	10/27/05	G.S.	NEW DRAWING.	

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

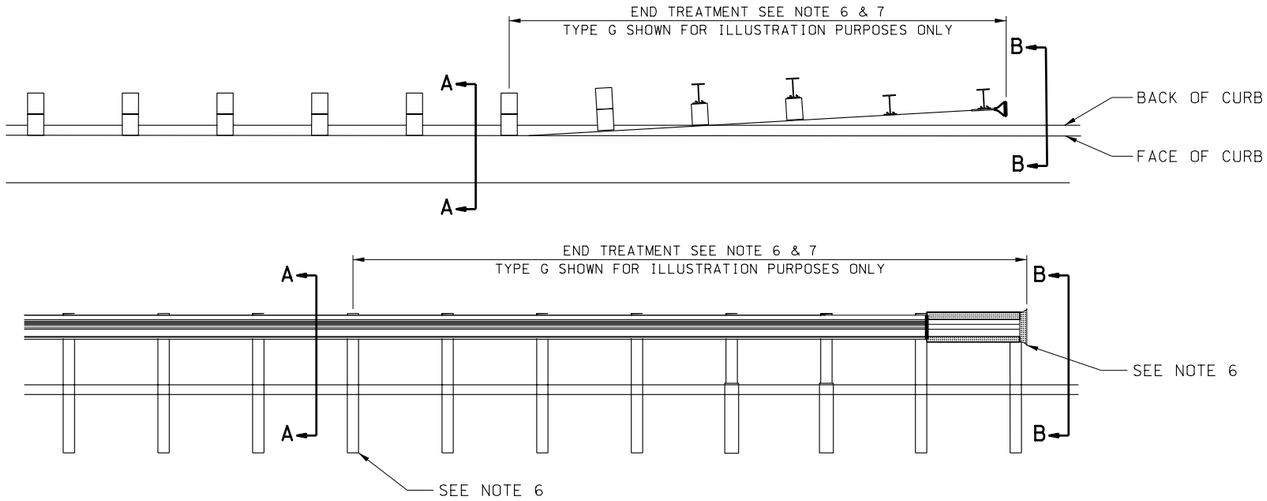
RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — OCT.27.2005 DATE

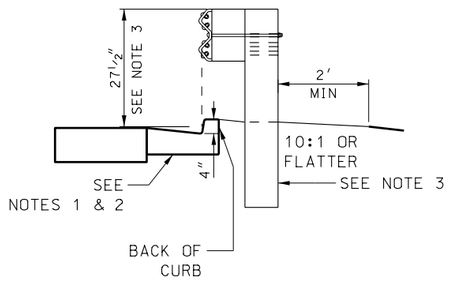
CHAIRMAN STANDARDS COMMITTEE APPROVED — OCT.27.2005 DATE

STANDARD DRAWING TITLE

W-BEAM GUARDRAIL MEDIAN BARRIER TRANSITION

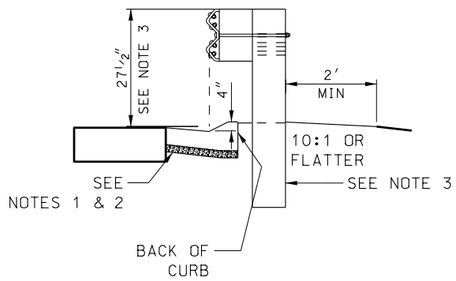
STD DWG
BA 4R





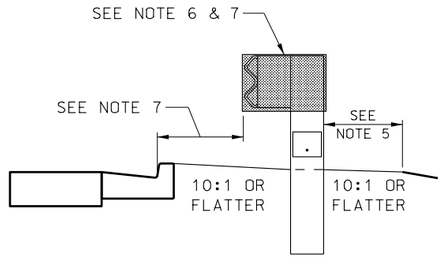
SECTION A–A

W–BEAM GUARDRAIL
MODIFIED TYPE B1 CURB AND GUTTER



SECTION A–A

W–BEAM GUARDRAIL
TYPE M1 CURB AND GUTTER



SECTION B–B

TYPE B1 AND TYPE MI SHOWN AS EXAMPLES
4 INCH MAXIMUM HEIGHT FOR ALL CURBS
AND/OR CURB AND GUTTER TYPES

NOTES:

1. MEET REQUIREMENTS OF STD DWG GW 2 PRIOR TO INSTALLING CURB AND/OR CURB AND GUTTER WITH W-BEAM GUARDRAIL.
2. MODIFY CURB AND CURB AND GUTTER TO A MAXIMUM OF 4 INCHES AT FACE OF CURB.
3. DRIVE GUARDRAIL POST TO THE DEPTH REQUIRED TO ATTACH BLOCK AND RAIL AT THE TOP HOLE OF THE POST. SET RAIL HEIGHT AT FACE OF CURB FROM TRAVELWAY SURFACE EXTENDED, WHEN RAIL ELEMENT IS AT FACE OF CURB.
4. INSTALL IN A MANNER THAT FACE OF W-BEAM RAIL IS FLUSH WITH FACE OF CURB.
5. CONSTRUCT PAD AS PER APPLICABLE CC STD DWG.
6. ATTACH END TREATMENT AT LAST POST OF TYPICAL RUN. GRADUALLY RAISE END TREATMENT RAIL ELEMENT TO MEET HEIGHT REQUIRED BY THE MANUFACTURER AT END TREATMENT HEAD. THIS APPLIES TO END TREATMENT TYPES "G" AND "H" SYSTEMS.
7. OFFSET END TREATMENT AS PER APPLICABLE CC STD DWG.
   A. TYPE "G" TYPICAL OFFSET 2 FEET.
   B. TYPE "H" TYPICAL OFFSET 4 FEET.

W–BEAM GUARDRAIL& END TREATMENT INSTALLATION WITH MODIFIED CURBS AND/OR CURB AND GUTTER TYPES

REVISIONS

NO.	DATE	APPR.	REMARKS
1	11/30/06	G.S	NEW DRAWING.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

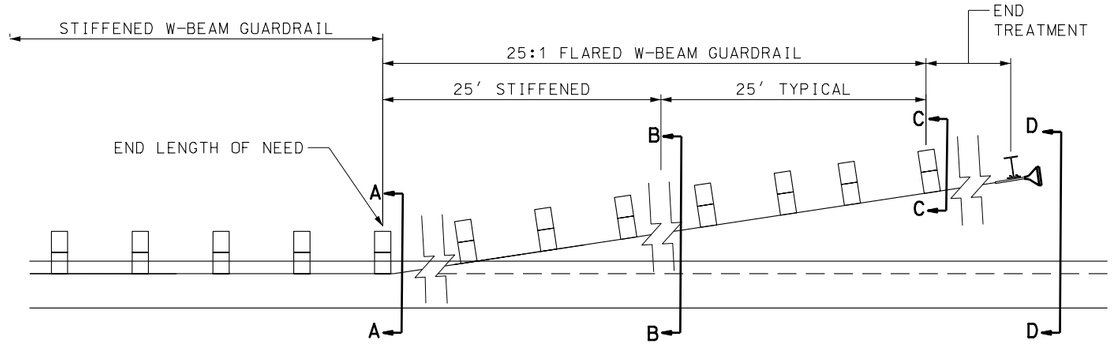
RECOMMENDED FOR APPROVAL — NOV. 30, 2006 — DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — NOV. 30, 2006 — DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL WITH MODIFIED CURB AND CURB AND GUTTER

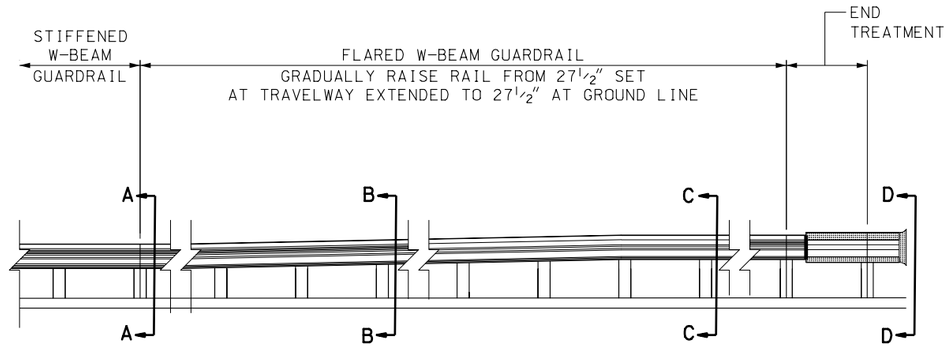
STANDARD DRAWING TITLE

STD DWG
BA 4S1

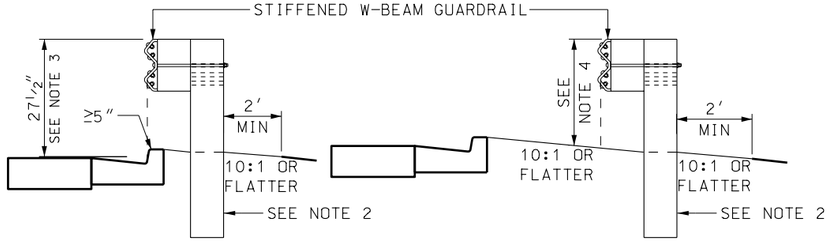
DGN File:L:\Standard Drawings\Imperial\2005Approved\ChangeBApproved\BA04S1.dgn
18-DEC-2006



PLAN
SEE NOTE 1

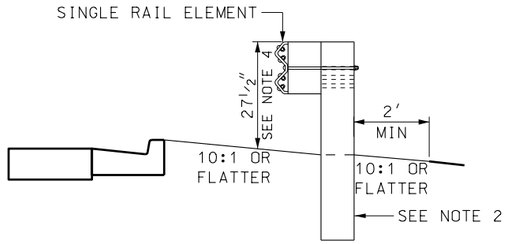


ELEVATION
SEE NOTE 1

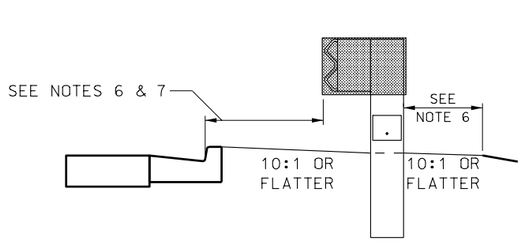


SECTION A–A

SECTION B–B



SECTION C–C



SECTION D–D

TYPE B1 CURB AND GUTTER SHOWN AS EXAMPLE
APPLIES TO ALL CURBS AND/OR CURB AND GUTTER TYPES
SEE NOTE 1

STIFFENING METHODS

NESTED W-BEAM

BACK SIDE RAIL ATTACHMENT

NOTES:

1. USE STIFFENED W-BEAM GUARDRAIL WHEN DESIGN SPEED IS 50 MPH OR GREATER.
2. DRIVE GUARDRAIL POST TO THE DEPTH REQUIRED TO ATTACH BLOCK AND RAIL AT THE TOP HOLE OF THE POST FOR COMPLETE GUARDRAIL RUN.
3. SET RAIL HEIGHT AT FACE OF CURB FROM TRAVELWAY SURFACE EXTENDED, WHEN RAIL IS AT FACE OF CURB.
4. GRADUALLY RAISE RAIL ELEMENT OVER THE LENGTH OF FLARED BARRIER TO ATTACH END TREATMENT AT REQUIRED HEIGHT.
5. ADDITIONAL STIFFENING OF W-BEAM GUARDRAIL TRANSTION, BA 4B, NOT REQUIRED WHEN INSTALLED WITH CURB AND CURB AND GUTTER.
6. CONSTRUCT PAD AS PER APPLICABLE CC STD DWG.
7. OFFSET END TREATMENT AS PER APPLICABLE CC STD DWG.
   A. TYPE "G": PLACE ALONG 25:1 FLARE LINE.
   B. TYPE "H": PLACE WITH 4 FOOT OFFSET FROM 25:1 FLARE LINE.

W-BEAM GUARDRAIL & END TREATMENT INSTALLATION WITH CURB & GUTTER 5" OR GREATER

REVISIONS

NO.	DATE	APPR.	REMARKS
1	11/30/06	G.S	NEW DRAWING.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
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RECOMMENDED FOR APPROVAL — NOV. 30, 2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — NOV. 30, 2006 DATE
DEPUTY DIRECTOR

W-BEAM GUARDRAIL WITH CURB AND GUTTER ≥5"
STANDARD DRAWING TITLE

STD DWG
BA 4S2

DGN File:L:\Standard Drawings\Imperial\2006approved\Changes&Approved\BA04S2.dgn
18-DEC-2006

2005 STANDARD DRAWINGS

END OF DRAWING BOOK PART 1